

# Animal focus

Vol 3 No 8 April – June 2018

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**\*Conservation of our wildlife resources & heritage**

**\*Canine Distemper:**

*A big threat to wildlife*

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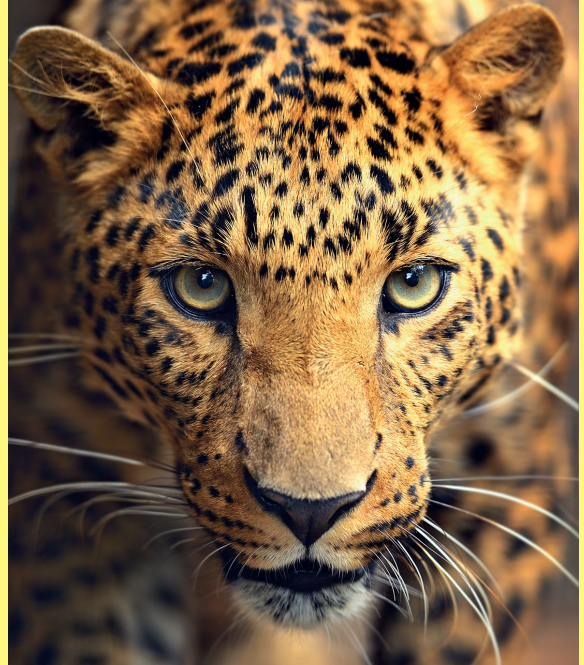
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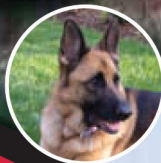
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## Editor's perch

### LET'S CATCH THEM YOUNG FOR BEST RESULTS IN CREATING SUSTAINABLE WILDLIFE



I am quite excited about this issue of Animal Focus where we have a heavy focus on wildlife conservation and sustainability. I invite you to read, think and enjoy the themes we deal with here.

I grew up in Nairobi, Eastlands, in the 80s. During those days, it was almost a foregone conclusion that there would be a school trip to The Nairobi National Park or to the Animal Orphanage.

I can remember as though it was yesterday, the excitement that would pulse within us when we would hear of a school trip to these places. We would coax our parents to give us as many goodies and snacks as possible and some pocket money to spare — Kshs 20 was lots of money those days and was enough to keep young mouths sucking on *sukari nguru* (unprocessed sugar chunks) among other delicacies.

The real great fun, however, would be seeing the 'big five'. What awe those animals inspired in us! We would tell stories of the visit for days on end and look forward to the next trip — which would surely come the next year.

Beneath all the fun and excitement however, was a very intentional training into the love of animals, and love them we did. I believe that my generation developed more respect for wildlife and appreciated the role wildlife plays in the economy of our country. However, where do all those poachers come from? Is it possible that the training I describe above was not as effective as it may have been intended? Be that as it may, I would still say — let's catch the children young and teach them the love of animals.

It is very heartening that animal welfare is now being taught as part of the school syllabus from grade 1. This is a very welcome move indeed and the government and all concerned deserve a pat on the back for making this happen.

King Solomon, one of the wisest men who ever lived said: "Train a child in the way he or she should go, and when old, he or she will not turn from it." (Proverbs 22:6) So training children to love animals and care for them, and training them to love and appreciate wildlife, as we were taught, is really the best way to ensure that we have conservationists in the future.

*Simon.*

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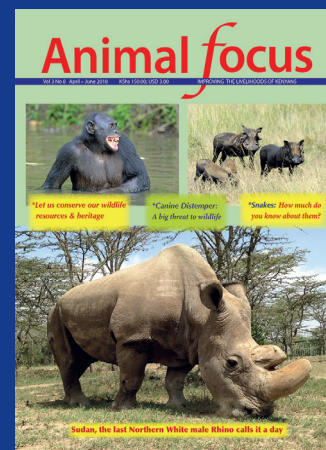
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## The Chair's Take

KVA continues to deliver on its mandate to provide leadership in the animal resources industry through stewardship of the veterinary profession to ensure effective service delivery in animal health, welfare, production and safety of food of animal origin. Veterinary services remain critical to the development of animal resources, especially livestock, that play multiple roles in the livelihoods of people in developing communities in countries such as Kenya, especially the poor. We continue rendering services through the animal resources industry in ensuring that agriculture shall be an economic/commercial enterprise that provides Kenyans with employment; not mere subsistence. KVA has always been determined to ensure all livestock farmers, no matter how small their enterprise, make a decent income and are able to meet their basic needs.



Dr Kahariri Samuel,  
National Chairman, KVA

Kenya Veterinary Association welcomes the identification of the Big Four Development agenda by the national government and continues to call upon all the stakeholders in the animal resource industry to focus on being the biggest contributors to the food sSecurity agenda while offering a significant contribution to the affordable healthcare and manufacturing agendas. In the same line, the government must identify the livestock sector as a key driver for the said development goals.

The Association continues advancing the advocacy agenda in operationalization of the Veterinary Medicine Directorate, implementation of the VSVP Act, playing an active role in ensuring that the livestock sector continues contributing to food security concerns in the country among many other interventions. Through partnership with the KCB Foundation and Directorate of Veterinary Services, KVA seeks to strengthen the marketing infrastructure for livestock and livestock products by establishment and implementation of a **National Livestock Identification and Traceability System**. This is aimed at restoration of the economic potential of the livestock sector in the country and changing the lives of the livestock farmers for the better. The Association has also identified partners to support the review of the laws in the animal resource industry in order to address the numerous changing needs and the legislative environment.

Owing to the fact that more than 75% of the Kenyan landmass is ASAL and the fact that these areas cannot rely on rain fed agriculture, the livestock sector stands as the most strategic answer to the food security question in Kenya. Veterinarians therefore, have a key role to play in the food security of this country along the entire value chain, all the way from the primary production to markets and the table. The involvement of the veterinarians at the primary production level is to ensure that the producers minimize losses at the farm level and maximize the profits while ensuring that the animals are produced at internationally acceptable standards that can guarantee safe food of animal origin for local and international consumption. The veterinarians must therefore continue receiving the requisite facilitation to continue strengthening the enforcement and implementation of the policies that support the livestock production value chain and certifications.

KVA continues to call upon all the stakeholders to embrace collaborations and create synergies in all the interventions in order to realize our dream sector. Further, I call upon all the members of the veterinary profession to strategically shift their focus and start investing along the entire value chain while aligning all their interventions and services to the Big Four Agenda of the Kenyan Government. God bless the animal resource industry!

**Dr Kahariri Samuel**  
**National Chairman, Kenya Veterinary Association**



*A baboon enjoys a splash*

# CONSERVATION OF OUR WILDLIFE RESOURCE & HERITAGE

**The Role of the Department of Clinical Studies and Faculty of Veterinary Medicine, University of Nairobi.**

*By*

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Do you know that the planet we live in is shared between us humans and as many as 14 to 100 million different forms of life?

A huge percentage of the planet's original life forms are extinct. Out of the existing life forms, only about two million species have been documented. And even after centuries of effort, some 86 percent of these life forms have yet to be fully described. Many of the existing ones will become extinct before they are discovered. The planet's life forms exist in a delicate balance, owing to the ever-

changing climate and other natural forces and phenomena - with consequent challenges to this balance.

The Kenya's Wildlife Conservation and Management Act 2013 has defined wildlife as 'any wild and indigenous animal, plant or microorganism or parts thereof within its constituent habitat or ecosystem on land or in water, as well as species that have been introduced into or established in Kenya'.

## ***A rich nation***

Kenya is amongst the richest biotic nations in Africa and worldwide. Kenya is endowed with an abundance of wildlife resources comprising over 35,000 species of flora and fauna including 25,000 invertebrates (two thirds are insects), 1,100 birds, 315 mammals, 220 reptiles, 898 fish, 110 amphibians and 7,004 documented vascular plant species. Many others are yet to be described.

Kenya's biodiversity asset, which plays crucial

ecological roles in the ecosystem, continues to be a major source of livelihoods for its people. Yet, despite their importance, the number of threatened wildlife species in Kenya has been increasing at an alarming rate with escalating human pressure. Currently, a total of 356 vascular plant taxa and some 97 vertebrate wildlife species are classified as critically endangered, endangered or vulnerable according to the IUCN Red Data List Categories and Criteria. The actual number of threatened invertebrates is unknown due to the paucity of research data.

### *A call for conservation*

This calls for urgent conservation and protection of our wildlife. These wildlife resources can be protected inside what is called protected areas and outside these areas. According to Kenya's Wildlife Conservation and Management Act, 2013, a protected area means 'a clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, to achieve long-term conservation of nature with associated ecosystem services and cultural values'.

Wildlife Conservation is the practice of protecting wild plant (flora) and animal (fauna) species and their habitats with the goal of ensuring that nature will be around for future generations to enjoy while at the same time recognizing the importance of wildlife and the associated habitats for the existence of humans and other species alike.

Kenya's wild animal resource is managed and protected in 20 National Parks, 4 Marine Parks, 25 National Reserves, 5 Marine National Reserves, 11

Nature Reserves, 2 Game Sanctuaries, 4 Wetlands of International importance (RAMSAR), 6 UNESCO-MAB Biosphere Reserves and other protected areas, across the country.

### *KWS - The custodian*

The Kenya Wildlife Service (KWS) is the custodian of Kenya's wildlife, on behalf of the Kenyan people. It oversees the country's wildlife resource. The KWS does not work alone, but in partnership with many other stakeholders like the Kenya Forestry Service (KFS); Community Conservation Groups / Associations; local and international non-governmental organizations and agencies and; individuals - in the protection of our wildlife resources. Protection of our wildlife is based on well laid out policies, legislations and regulations.

Wildlife resources constantly face the challenge of extinction. The drivers of this extinction are many and include: degradation of the environments which they inhabit (ecosystems); loss of habitat; limitation of expansion of vegetation; international trade, especially the illegal forms; and many others. The sensible thing to do then is that we should aim at ensuring we use our wildlife resources in a manner that we leave something for our future generations to use and enjoy, thus what is commonly referred as 'sustainable utilization' of this resource.

Sustainable use of wildlife resources means present use of these resources, in a manner that does not compromise the use of the same by future



*Lions stalk zebras in the wild*

Rhinos face off each other



generations or diminish the carrying capacity of wildlife ecosystems and habitats. This requires that we not only protect what we have, but we also apply time-tested principles of wildlife conservation through sustainable utilization to meet the benefits of present and future generations and sustainable management so as to permit only such use of it as constitutes sustainable use.

### **Government measures**

Like any sensible government, the government of Kenya has in place measures to protect the wildlife resource within its jurisdiction and also works with other governments all over the world to ensure the protection of the global wildlife resources through its commitment to international instruments – e.g., being signatory to and domesticating international laws and instruments aimed at protecting wildlife resources. In the domestic front, Kenya has the Wildlife Conservation and Management Act of 2013. This Act applies ‘to all wildlife resources on public, community and private land, and Kenya territorial waters’. The message from this Act to us all is very clear. We are all responsible for conserving our wildlife resources.

In the recent past, there has been increased private sector and public participation in the management of wildlife resources in the country. The number

of wildlife conservancies / community-based wildlife conservation initiatives has increased since the enactment of the Wildlife Conservation and Management Act, CAP 376 of 2013, which established community wildlife service (CWS) that facilitates active community participation in wildlife conservation and management outside protected areas. For example, the Kenya Wildlife Conservancies Association (KWCA) claims a membership of 140 private and community conservancies, spread across 19 counties of Kenya. Within this association, one will find conservancies, water resource user associations, wildlife clubs, and group ranches, among others. And yet, there are other entities external to this association, like private game sanctuaries and orphanages, all working together and individually to conserve Kenya’s wildlife species.

### **Role of the Department of Clinical Studies and Faculty of Veterinary Medicine**

The Faculty of Veterinary Medicine, university of Nairobi, is a major stakeholder in the management and conservation of wildlife resources in Kenya. Its role cuts across areas of wildlife policy and legislation formulation; training; research and; delivery of production, clinical and other services in support of the wildlife sector in the country. Imparting knowledge and developing skills in

life forms: the Faculty of Veterinary Medicine of the University of Nairobi has been offering both Bachelor of Science in Wildlife Management and Conservation and Master of Science in Wildlife Health and Management degrees for more than 15 years now. The Masters programme is offered in the Department of Clinical Studies whose Wildlife Section also co-manages wildlife programmes in the Faculty.

Our role as faculty starts from providing the basics on wildlife. We know that understanding the planet's various life forms is critical in ensuring that we have personnel who have the knowledge and skills necessary to appreciate the interplay between species and their habitats and, the consequences thereof. This will then form the basis for us to stem the rate of extinction of the species for the continued survival of these life forms. Wildlife management and conservation scientists must have a good grounding in the nature and make up of various life forms, the environments in which they exist and the threats to their existence, if they have to develop strategies that will enhance their survival – thus conservation of the species. The Faculty of Veterinary Medicine, University of Nairobi provides the necessary knowledge and skills.

**Training in management and conservation of the species**

There are many threats to our wildlife resources. One of them is unsustainable utilization of this critical resource. Our responsibility as one of the leading training and research institutions is to train professionals who have what it takes to better conserve and manage this resource. We are cognizant of the fact that there has been an upsurge in the number of community-based organizations involved in wildlife conservation through various initiatives. These initiatives include establishment of conservancies and wildlife sanctuaries in various parts of the country. These wildlife initiatives and associated facilities need among other things, wildlife conservation and management professionals. As an institution, the Faculty of Veterinary Medicine, University of Nairobi has in the last 15 years ably produced such personnel at both undergraduate and postgraduate levels, who can be found in some of these facilities, guiding the conservation and management of our wildlife resources.

**Research aimed at better conservation and management of wildlife resources**

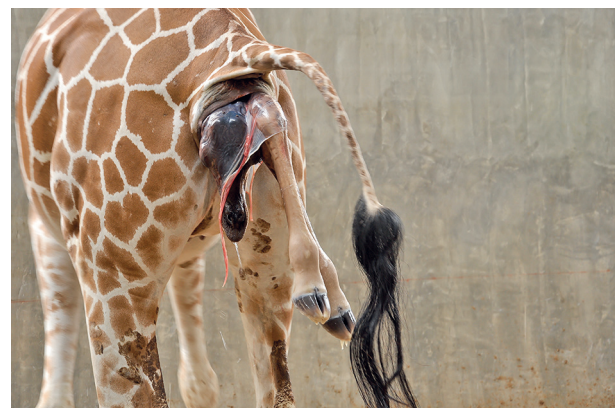
research into reproductive biology, wildlife diseases, welfare of wild animals in different situations, nutrition of wildlife species, ecological processes

guaranteeing persistence of healthy wildlife populations, wildlife-human conflicts and in various other thematic areas helps us understand the ever-changing dynamics of our wildlife species and their habitats. Findings from such studies not only inform wildlife policy, but also make us understand how to better manage our ecosystems and habitats and stem any challenges to these systems in our efforts to better conserve and manage our wildlife resources.

**Support services in clinical management of deserving wildlife patients**

our expertise and facilities offer us the opportunity to provide support services of clinical nature to wild animal patients suffering from various maladies. We have always been at the forefront in surgical management of problems of some wild animals in our clinic, whenever our services are required. This invariably contributes to conservation of some of the endangered wildlife species in the country.

As a Faculty, we are getting even better positioned, through continuous review of our training programmes and other initiatives, to lead from



*New life ensures survival of the species*

the front in training and producing wildlife professionals who will positively influence and guide the conservation and management of our wildlife heritage, into the future. We are currently strategically focused on expanding our relevance and reach across borders, greatly impacting on the training of a critical mass of wildlife managers and conservationists in the region.

We are playing our role. What about you?



Sudan, the last male Northern White Rhino.



**NORTHERN WHITE RHINO (NWR)**

Scientific name: *Ceratotherium simum cottoni*

Conservation status: Critically endangered; probably extinct in the wild

Lifespan: up to 40 years (in the wild)

Size: weighing from 1,700 to 2,400 kg or 1.7-2.4tonnes. It is the third largest African animal (after the elephant and hippo)

Shoulder height:150-185 cm

Gestation period:510 days (17 months) on average

White rhino is actually the sixth rhino species *Ceratotherium cottoni* distinct from the southern white rhino. However, this opinion has not been universally accepted by other rhino specialists.

### Why the Rhino is called 'white'

White rhinos are not white, they are grey. The white comes from a misinterpretation of the Dutch 'wijde' (wide in English), due to the width of the rhinoceros' mouth. Their wide mouth is an adaptation which helps them graze on grass, as opposed to the black rhino's pointed mouth adapted for browsing on leaves, shoots and branches.

### Number of Northern white rhinos are left in the world

Northern white rhinos are probably extinct in the wild with two rhinos in captivity. The two individuals are in a semi-wild environment on Ol Pejeta Conservancy in Kenya.

### NWR historic range

The northern white rhino used to range over parts of north-western Uganda, southern Chad, South Sudan, the eastern part of Central African Republic and the north-eastern Democratic Republic of the Congo (DRC). There is fossil evidence that the northern white rhino ranged into the Rift Valley in Kenya 3,000 years ago.

### Where and when were they last seen

The last four wild individuals were seen in Garamba National Park, DRC, in August 2005 and signs of their existence were still seen in 2007. Subsequent surveys in June 2008 failed to locate them; there was an isolated and unconfirmed report of three white rhinos in southern Sudan in 2008.

### NWRs at Ol Pejeta Conservancy Kenya

Initially, four northern white rhinos were transported to Ol Pejeta Conservancy from Dvur Králové Zoo in the Czech Republic in December 2009. One of them, male Suni, died in October 2014 of natural causes. Females Najin and Fatu were born in the Dvur Králové Zoo while Sudan was born in Sudan and moved to then Czechoslovakia in 1975.

On arrival, Ol Pejeta placed the northern white rhinos under 24 hour, armed surveillance. Despite the fact that they were seen mating, there were no successful pregnancies. In early 2014, plans to introduce a male southern white rhino to the two female northern whites got underway. It was hoped that if breeding were successful, the hybrid offspring would at least conserve some of the northern white genes. Again, this proved unsuccessful. Tests later revealed that neither of the females were capable of natural reproduction, and that only one was fertile enough to conceive artificially. The death of the other northern white male, Suni, in October 2014, further emphasised the need to come up with alternative solutions, and fast.

### What is their main threat?

The main threat to their survival in the wild was, and still is hunting, in particular for their horns. Illegal poaching is the biggest threat to all rhinos. The driving force for poaching is demand for a rhino horn, at present especially in countries of East Asia.

### What is the value of these last northern white rhinos?

These northern white rhinos represent the last known individuals of the sub-species and so contain valuable and unique genes. Their genes evolved in the wild and give the northern white rhinos vital traits for survival in their natural habitat. For example, resistance to certain white rhino diseases in East Africa may only be provided by northern white rhino genes. Ultimately, the value of these animals can only be realised if they are reintroduced to the wild. Their genes can then be expressed in the environments in which they were evolved and so strengthen the white rhino's chance of survival. The sub-species also plays an important role as a large herbivore in its native ecosystems.

### Long-term plan for these rhinos

The long-term objective is to reintroduce northern white rhinos and future offspring into secure habitats within their former range. This objective may only be realised within 50–70 years. As none of remaining females is capable of natural breeding, the first objective is to develop assisted reproduction technologies that would produce a northern white rhino offspring.

## FOCUS ON WILDLIFE

To reach this aim, a robust protocol to optimize a procedure of harvesting and maturing oocytes from white rhino females, to fertilize oocytes and to transfer an artificially produced embryo to a southern white rhino have to be developed. When this process is standardized on close relatives of northern white rhinos, the team of Dvur Králové Zoo, Ol Pejeta Conservancy, IZW Berlin, Kenya Wildlife Service and other cooperators will aim at harvesting oocytes from the last northern white rhino females, mature oocytes, fertilize them with northern white rhino semen, generate embryos on a large scale and cryo-preserve them or transfer them directly into a surrogate mother of a southern white rhino origin.

After foundation of a viable breeding nucleus at Ol Pejeta, new populations can be translocated to create or reinforce existing white rhino populations with northern white rhino genes. By increasing the number of populations, the overall risk to the subspecies will be spread and reduced.

### How old are the remaining NWRs?

- Fatu- female was born on 29th June 2000
- Najin- Female was born on 11th July 1989



A Northern White Rhino receives attention

### Last Male Northern White Rhino

Born: in Sudan, likely in 1973

Captured: wild-caught in Shambe area(Sudan) in early 1975

Arrival to the zoo: in September 1975 Sudan arrived to Dvur Králové Zoo where he lived until December 2009

Life in the zoo: In Dvur Králové Zoo, Sudan survived decimation of the northern white rhinos in the wild. He lived together with other northern white rhinos and mated a few females. With female Nasima he sired two babies. His first daughter Nabiré was born in 1983 and died in Dvur Králové Zoo in 2015 of a ruptured cyst. His second daughter Najin was born in 1989 and resides on Ol Pejeta now.

### Transport to the conservancy:

In December 2009, Sudan and three other northern white rhinos were moved to Ol Pejeta from Dvur Kralove Zoo in the Czech Republic. It was hoped that the climate and rich grasslands of the Conservancy, similar to the native habitat of this species, would provide them with more favourable breeding conditions. The northern white rhino was declared extinct in the wild in 2008. High demand for rhino horn in Asia and the subsequent unsustainable poaching levels decimated populations, while regional insecurity in its native lands made conservation efforts challenging.

As he was the very last northern white rhino male on the planet since December 2014, he stood as a symbol of the plight of rhinos worldwide.



## NOTICE TO ALL DAY TRIPPERS

OI Pejeta has introduced revised day trip rates for the PEAK holiday season days.

### DAY TRIP CONSERVANCY ENTRY FEES

EASTER WEEKEND; 30<sup>th</sup> March, 31<sup>st</sup> March, 1<sup>st</sup> April and 2<sup>nd</sup> April  
Citizen Rates: Adult per day: 2,000 | Child per day: 1,000  
Resident Rates: Adult per day: 3,000 | Child per day: 1,500

Death: Sudan died on 19th March 2018

Sudan was being treated for age-related complications that had led to degenerative changes in muscles and bones combined with extensive non-healing skin wounds. His condition worsened significantly, and he was unable to stand up, was unable to eat and was suffering a great deal. The OI Pejeta and Kenya Wildlife Service Veterinary team made the decision to put him to rest in order to alleviate his pain and suffering.

Dr. Stephen Dicko Ngulu  
Wildlife Veterinarian, OI Pejeta Conservancy.

### 21 Rhino Facts

1. There are five different species of rhinoceros. Three are from southern Asia and two are from Africa. They are the Black Rhinoceros, White Rhinoceros, Indian Rhinoceros, Javan Rhinoceros and Sumatran Rhinoceros.
2. The name rhinoceros means 'nose horn' and is often shortened to rhino. It comes from the Greek words rhino (nose) and ceros (horn).
3. White rhinoceros are the second largest land mammal. The white rhino is the largest rhino species and can weigh over 3500 kg (7700 lb) and is the largest land mammal after the elephant. Elephants can grow to be 7,000 kg (15,000 lb)
4. Rhinos can grow to over 6 feet tall and more than 11 feet in length.
5. Three of the five rhinoceros species are listed as being critically endangered. The Black Rhinoceros, Javan Rhinoceros and Sumatran Rhinoceros are all Critically Endangered which means they have 50% chance of becoming extinct in three generations.
6. Rhinoceros have thick, sensitive skin. Rhino skin maybe thick but it can be quite sensitive to sunburns and insect bites which is why they like wallow so much – when the mud dries it acts as protection from the sunburns and insects.
7. Relative to their large body size, rhinoceros have small brains. But this doesn't mean they are stupid
8. Rhinoceros horns are made from a protein called keratin, the same substance that fingernails and hair are made of. The rhino's horn is not bone and is not attached to its skull; it is also not hollow like elephant tusks. It is actually a compacted mass of hairs that continues to grow throughout the animal's lifetime, just like our own hair and nails. The longest known on a black rhino was 4 feet 9 inches long (they average about 20 inches in length on the black rhino).
9. Some rhinos use their teeth – not their horns – for defence. When a greater one-horned rhino is threatened it slashes and gouges with its long, sharp incisors and canine teeth of its lower jaw.
10. Rhinoceros are herbivores (plant eaters). They have to eat a lot to fill their large bodies.
11. A group of rhinoceros is called a 'herd' or a 'crash'.
12. Despite their name, White and Black Rhinoceros are actually gray.  
The white rhino's name is taken from the Afrikaans word "weit," which means "wide" and describes its mouth. Early English settlers in South Africa misinterpreted the "weit" for "white". Black rhinos probably got their name from the dark wet mud in their wallows that made them appear black in colour. Both species are essentially gray in colour.
13. The closest living rhino "relatives" are tapirs, horses and zebras.  
They are part of a group of mammals called odd-toed ungulates.
14. Rhinos are speed machines. They can run up to 30 – 40 miles per hour; the fastest human can run 15 miles an hour, so finding a tree to climb is a better strategy than trying to outrun a rhino!
15. Rhino pregnancies last forever, or at least it might feel like it, they are pregnant for 15-16 months! Mother rhinos are very nurturing. The young stay with them until they are approximately 3 years old.

## LEVAFAS DIAMOND Fluke and Worm Drench

# Experience Total Control in Worm Management



Manufactured by: Norbrook Kenya Limited,  
Old Jimuru Road, Kituri, P.O. BOX 1289 00108-Saiti Centre, Nairobi  
TEL: +254 20 2019457/81 3591544/77 FAX: +254 020 2019456  
Cell: +254 722 200804



### LEVAFAS DIAMOND ORAL SUSPENSION

#### PRESENTATION

A bright yellow suspension.

#### COMPOSITION

Levafas Diamond contains:  
Levamisole Hydrochloride BP (Vet) 3.0% w/v  
Oxyclozanide BP (Vet) 6.0% w/v

#### INDICATIONS

Levafas Diamond is a broad spectrum anthelmintic for use in the treatment and control of both gastrointestinal and pulmonary nematode and adult liver fluke infections in cattle, goats and sheep only. Levafas Diamond should be used in cases of parasitic gastroenteritis and lungworm disease caused by mature and developing immature forms of those organisms sensitive to treatment with Levamisole Hydrochloride.

#### Lungworms : *Dictyocaulus spp*

#### Gastrointestinal worms :

*Haemonchus spp; Ostertagia spp;* (except inhibited *Ostertagia* larvae in cattle); *Nematodirus spp;* *Trichostrongylus spp; Cooperia spp;* *Oesophagostomum spp;* and *Bunostomum spp;* Levafas Diamond also removes most mature *Fasciola spp* (flukes) present in the bile ducts of the liver.

#### ADMINISTRATION AND DOSAGE

Levafas Diamond should be administered as an oral drench. Dosing must be carried out accurately using a suitable gun system.

**DOUBLE STRENGTH;** Follow dosage instructions carefully

- Always shake the container well before use.
- Do not mix with other products.

#### DOSAGE GUIDE

Cattle		2.5ml/10kg bodyweight
Cattle, Bodyweight	Dose(ml)	
50kg(approx 1cwt)	12.5ml	
100kg(approx 2cwt)	25.0ml	
150kg(approx 3cwt)	37.5ml	
200kg(approx 4cwt)	50.0ml	
250kg(approx 5cwt)	62.5ml	
300kg(approx 6cwt)	75.0ml	

Cattle over 300kg should be given a further 2.5ml per additional 10kg

Sheep/ Goats	0.5ml/2kg bodyweight
Bodyweight	Dose(ml)
10kg(approx 22lbs)	2.5ml
20kg(approx 44lbs)	5.0ml
30kg(approx 66lbs)	7.5ml
40kg(approx 88lbs)	10.0 ml
50kg(approx 110lbs)	12.5ml
60kg(approx 132lbs)	15.0ml

Sheep and goats over 60kg should be given a further 1ml per additional 4kg

#### TREATMENT INTERVALS

Every three months or as advised by a Veterinary Doctor.

#### PHARMACEUTICAL PRECAUTIONS FOR ANIMAL

##### TREATMENT ONLY

##### Withdrawal Period:

Animals may be slaughtered for human consumption only after 28 days from the last treatment.

##### Contra-indications, warnings, etc.

- Levafas Diamond may be administered to pregnant or lactating animals. However, care should be taken when treating heavily pregnant animals, and animals under stress from adverse weather conditions, poor nutrition, penning, handling etc.
- Veterinary advice should be sought on appropriate dosing programmes and stock management, to achieve adequate parasite control and to reduce the likelihood of anthelmintic resistance developing.

#### FIRST AID INSTRUCTIONS AND WARNINGS

- Do not eat, drink or smoke when using this product.
- Wash splashes from skin and eyes immediately. If irritation persists seek medical advice.
- Remove any contaminated clothing immediately.
- Wash hands and exposed skin after handling this product and before meals.
- If symptoms such as dizziness, nausea, vomiting or any adverse reaction occurs then medical advice should be sought immediately.

#### STORAGE CONDITIONS

Do not store above 30°C.  
Protect from light.  
Keep out of reach of children.

PACKS			
125ml	500ml	1 liter	5 liters



## 21 Rhino Facts (Contd)

16. Rhinos have poor eyesight, but very well-developed senses of olfaction (smell) and hearing.

A rhino has difficulty detecting someone standing only a hundred feet away if the individual remains still. However, if the person makes the faintest sound or the rhino is able to smell the person, it will easily detect him, even at much greater distances. The olfactory portion is the largest area of the rhino's brain.

17. African rhinos are a good 'home' for oxpeckers

The oxpecker eats ticks and other insects that it finds on the rhino, and creates a commotion when it senses danger. This helps alert the rhino.

18. Rhinos communicate by doing a poo! Rhinos use piles of dung to leave "messages" for other rhinos. Each rhino's smell is unique and identifies its owner. It can also tell a rhino if the other rhino is young/old/male or female. They also tell other rhinos that this is their territory.

19. Rhinos have been around for over 50 million years. They haven't changed much since prehistoric times (though of course they tended to be a lot woollier back then!) Some of the first rhinos didn't have horns and once roamed throughout North America and Europe. No rhino species have ever inhabited the South American or Australian continents.

20. The Sumatran rhino is the closest living relative of this ancient extinct woolly rhino. These rhinos had thick, shaggy coats and were hunted by early humans and are depicted in cave paintings dating back more than 30,000 years ago.

21. What you eat matters. The black rhino has a hooked lip which allows it to feed on trees and shrubs. The white rhino has a long, flat upper lip perfect for grazing on grasses. The upper lips of the three Asian rhino species allow these animals to browse vegetation in tropical forest habitats.

BY: DAVID OBIERO ODUORI

## CANINE DISTEMPER: A THREAT TO WILDLIFE BIODIVERSITY

### Introduction

What does the 'King' of the jungle -the lion, with his fine mane and highly distinctive face, an apex predator fear more than senescence? Canine distemper. Canine distemper has been recognized for ages in dogs to have the highest fatality rate alongside rabies (Appel and Summers, 1995). The disease infects a wide spectrum of carnivores with at least eight out of the eleven families of carnivores falling prey to it (Hass et al., 1996). It has been reported in both free living and captive carnivores in different parts of the world. In East Africa within the Serengeti-Mara ecosystem, outbreaks are believed to have altered carnivore populations since the late 1960s (Schaller, 1972 cited in Haas et al., 1996). Some of the species affected in this ecosystem have included: silver backed jackals and bat eared foxes in 1978 (Roelke-Parker et al., 1996), the African wild dog in 1991, 2000 (van de Bildt et al., 2002) and 2007 (Goller et al., 2010), lions in 1994 (Roelke-Parker et al., 1996). In Europe the causal pathogen has been detected in foxes, wolves, badgers and stone martens of Spain and Germany (Sobrino et al., 2008; Frolic et al., 2000). Captive leopards, tigers, lions and a jaguar have been reported to have succumbed to infection with 17 mortalities in North America (Appel et al., 1994). In its bid to expand its already broad host range, the pathogen has been reported to infect rhesus monkeys as per the diagnosis of an 'unidentified' respiratory disease with approximately 30% death rate reported in Guangxi Zhuang, China (Qiu et al., 2011). The list is not exhaustive but clearly shows the likely menace posed by this disease. This article aims to raise the awareness of this disease by exploring; its cause, transmission, clinical signs, diagnosis and control.

### What causes Canine distemper?

Canine distemper is caused by a virus known as Canine distemper virus (see figure 1 below), which as mentioned earlier infects a broad array of carnivores. The virus has been classified under the family *Paramyxoviridae* and the genus *Morbillivirus*. This genus also hosts the measles virus, peste des petits ruminants virus and the recently eradicated rinderpest virus. More recent additions have included phocid distemper virus of seals and cetacean morbilliviruses, affecting whales, dolphins and porpoises (Harder and Osterhaus, 1997).

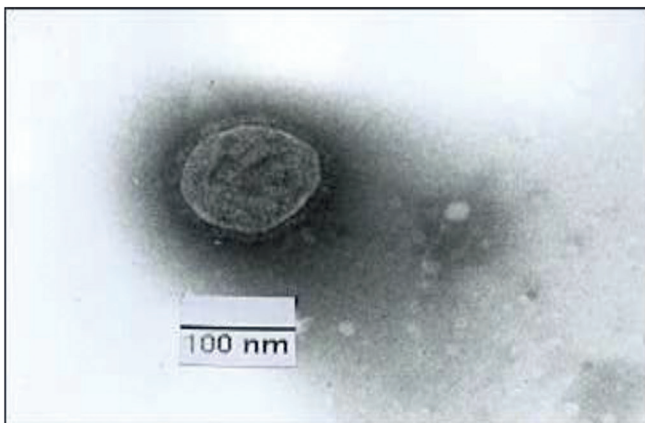


Figure 1: Electron microscope photo of samples of isolated structures of *Paramyxovirus* (Stobbe, 2012)

## How is Canine distemper transmitted?

Canine distemper virus is transmitted predominantly via aerosols of respiratory secretion. The infected commence shedding the virus approximately one week post infection. The virus is shed in all body excretions. Despite the fact that susceptibility is age indiscriminate, the young are more at risk when passive maternal immunity is lost. Animals that happen to brave an attack acquire a lengthy immunity, devoid of a carrier state (Appel and Summers, 1995).

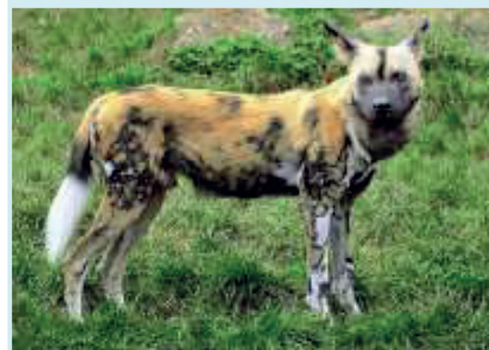
Transmission between dogs and wildlife can be via direct contact or indirectly especially for large carnivores such as lions. In this case lions are thought to get infected through chains of transmission in other species e.g. jackals, mongooses and hyenas. Such interactions are thought to be amplified during drought when human, wild and domestic animals scramble for resources (Cleaveland et al., 2000).

## The role of man: Canine distemper in the Wild

Man has been without a doubt accompanied by his domestic animals wherever he went and consequently domestic species have been introduced to new habitats. Having been the first animal to be domesticated over 15,000 years ago (Savolainen, 2002), the domestic dog (*Canis familiaris*) currently claims to be the most abundant carnivore on the surface of the earth (Daniels and Berkoff, 1989). Its global population estimate is in the range of 432 million (Brickner, 2000).

The abundance of unvaccinated populations of dogs in urban areas of some developing countries facilitates high contact rates and transmission between infected and susceptible dogs (Acosta-Jamett et al., 2011) (see figure 2 below). These dogs are more often than not allowed to roam (personal observation). Their numbers create an environment whereby pathogens of high virulence like the canine distemper virus can be maintained. As a consequence, occasional contact results into a spillover of the disease into the wild carnivore population (Cleaveland et al., 2000) (see box 1 above on the right).

### Box 1: Canine distemper outbreaks in wild dogs



The African wild dog (*Lycaon pictus*) (little five tours and safaris, 2012)

In December 2000, the efforts of an African wild dog conservation programme at Mkomazi Game Reserve, Tanzania were greatly jeopardized by the disease. An outbreak claimed 49 out of 52 animals. (van de Bildt et al., 2002). Similarly a fatal canine distemper outbreak was incriminated in the deaths of members of an African wild dog pack in the Serengeti ecosystem in 2007. Direct contact with infected domestic dogs was suspect in both occasions.

The African wild dog is highly endangered with a population of less than 5500. It is only found in Africa, south of the Sahara (Goller et al., 2010).



Figure 2: Dogs in a slum in Nairobi, Kenya. The lady in the picture owned 40 dogs, most of which had to be confiscated by a local animal welfare organization (Oduori, 2012).

### Clinical signs and diagnosis

In dogs, a transient fever 3-6 days post infection accompanied with loss of appetite is observed. This is as sequelae to the virus' pathogenesis as it primarily replicates in the respiratory epithelium before a viraemia disseminates the virus to all lymphatic tissues and multiple organ systems. Ocular and nasal discharges may be observed with bacterial infections complicating the succeeding gastro intestinal signs. An encephalomyelitis may occur. This is responsible for an array of neurologic signs that include muscle twitching; paresis or paralysis especially of the hind limbs; convulsions and seizures (The Merck Veterinary Manual, 2011). The signs described have been observed in outbreaks in wildlife species (Appel and Summer, 1995; Roelker-Parker et al., 1996) (see Box 2 below). The mortality rate depends on the host species affected and the immune state of the individual, outbreaks have been known to exceed 80 % mortality rate.

To complement the clinical signs observed, diagnosis is derived via the demonstration of inclusion bodies and or canine distemper virus antigens in conjunctival smears or white blood cells (Appel and Summers, 1995). An even more reliable diagnosis is obtained via examination of histological lesions (see figure 3 below) or performing an immunofluorescent assay for viral antigens on these tissues. Serological tests revealing significant levels of virus specific antibodies in the absence of a previous vaccination history may also aid to support diagnosis (The Merck Veterinary Manual, 2011).

#### Quick facts

- \*By eating pest insects, bats save the U.S. agriculture industry an estimated US dollars three billion per year.
- \*14 new species of dancing frogs were discovered in 2014, raising the global number of known dancing-frog species to 24.
- \*A sea lion is the first non-human mammal with a proven ability to keep a beat.

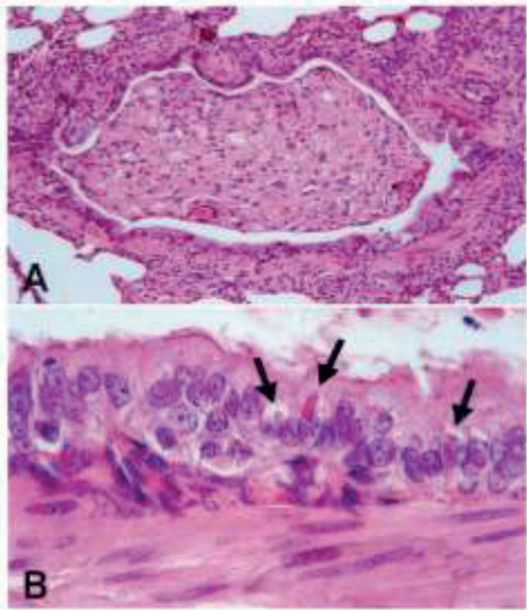


Figure 3: Histological section of lung tissue of an African wild dog with canine distemper. In picture A, cell detritus and inflammatory cells plug a bronchiole. In picture B, details of picture A displaying multiple eosinophilic intracytoplasmic viral inclusions within the bronchiolar epithelium (van de Bildt et al., 2002).

### Control of canine distemper

Canine distemper can be realistically controlled by vaccination. Research in both Tanzania and Chile traced outbreaks in wild canids to high density urban areas. Dog populations in these regions acted as source populations for dogs in rural areas adjacent to protected areas (Cleaveland et al., 2000; Acosta-Jamett et al., 2011). Guided by evidence, sensitization initiatives and vaccination programs should therefore prioritize these areas. Vaccination of domestic dogs can be complemented by fertility control measures and a restriction of the number of dogs one can own (Laurenson et al., 2005).

When interventions target the wild canids, options also include vaccination. Inactivated canine distemper virus vaccines are used as opposed to live vaccines (used in domestic dogs) which are potentially virulent. As a case in point, the black-footed ferret was almost rendered extinct by live distemper vaccines. Research into safer recombinant and subunit vaccines is recommended for zoo and endangered species (Appel and Summers, 1995). This approach (use of inactivated vaccines) has reaped success in the control of canine distemper in Chanel Island foxes.

Another control option would be to separate the domestic dogs from the wild canids. This may be achieved by either fencing, restraining of domestic dogs and creation of buffer zones

### Box 2: Distemper outbreak in the lions of the Serengeti



The 'King' of the jungle (The Garden Of Eden, 2012)

A disease characterized by neurologic signs that include seizures, twitching of facial and leg muscles was reported in early 1994 affecting lions in the Serengeti National park. In three months, eleven carcasses were reported prompting investigations into a potential epidemic. The disease was later identified as canine distemper, by then having affected 85% of the Serengeti lion population. The source was traced to domestic dogs in local villages adjacent to the National park. The overall lion population in the Serengeti before the outbreak was estimated at about 3000, by the end of 1996 the population had been reduced to 2000 (Roelke-Parker, 1996).

A video footage of suspected canine distemper in a lion in Kgalagadi Transfrontier Park, southern Africa can be viewed via this link (warning! images in the footage may be disturbing)

<http://www.youtube.com/watch?v=uMEfvrXqrH4> (Keyter, 2010)

(Laurenson et al., 2005).

## Conclusion

The need to conserve biodiversity is becoming increasingly important. Among others, biodiversity functions as a buffer against disease causing organisms. Its loss presents a potential threat to sustainable development of future generations (Maillard and Gonzalez, 2006). In the context of wildlife, its importance can be illustrated directly through its contribution to the growth of economies. An African example is Kenya; in 2006 Kenya attributed 70% of its gross tourism earnings, 25% of its Gross Domestic Product and more than 10% of the total formal sector employment to wildlife. Other significant contributions include socio-cultural, aesthetic functions and a key role in critical ecological functions (MoFW, 2011). A generalist pathogen such as the canine distemper virus with its ambitious host range poses a real threat to biological diversity. Its involvement in the epidemiology of Paget's disease in man (Mee et al., 1998) makes its control even more relevant.

It is quite likely that with the increase in human population, human settlements and activities will encroach conservation areas and consequently the risk of disease transmission between wildlife, humans, and livestock is significantly increased (Osofsky, et. al., 2005) (see figure 4 below). If this cannot be entirely averted, people should be aware of the potential threat their domestic pets and in this case dogs pose to the array of carnivores described, therefore owner or community education is an integral component of any intervention option. Amongst the control options, vaccination of domestic dogs is thought to be both practical and effective when executed properly (Laurenson et al., 2005). Dog owners should therefore collaborate during vaccination campaigns and or have their dogs vaccinated by a qualified veterinarian.

Vaccinate your dog, save the wild!



Figure 4. The Nairobi National Park, human settlements can be seen in the background (Nairobi Tented Camp, n.d).

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# How much do you know about snakes?

By Dr Ruth Omani

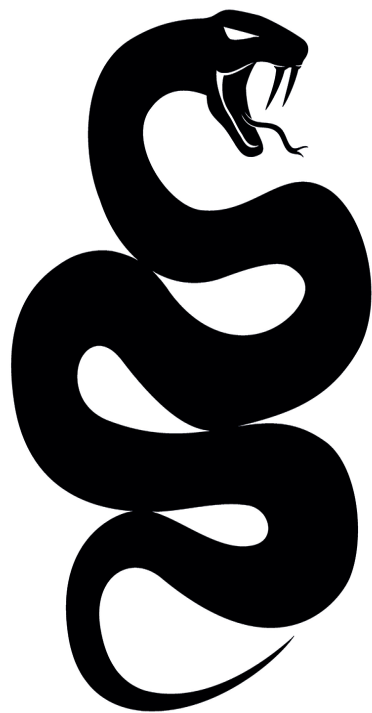
Postgraduate student at the University of Nairobi and at the University of Edinburgh.

As a veterinarian, how much do you know about snakes?

Do you know that there are over 171 species of snakes in Kenya? Do you know that not all snakes are poisonous? Do you know that snakes, among other reptiles, have roles to play in the ecosystem? Do you know that the roles they play in the ecosystem are so critical to overall wellbeing of humans, the creatures that have modelled themselves to be at the very apex of the ecosystem web?

## *The role of snakes*

Snakes are part of the middle order of our ecosystems; they are predators as well as prey to a number of species. Their absence in the ecosystem would have a cascade effect with the increase of



Graphic of a snake

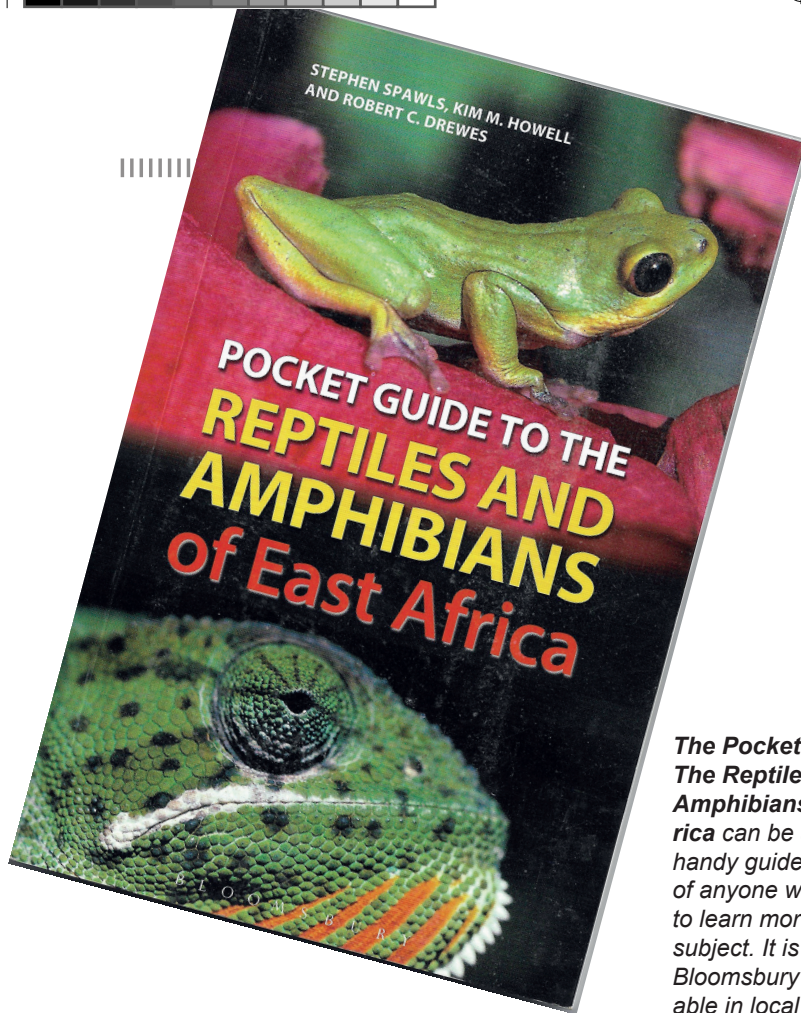
their prey such as, insects, rodents, frogs, lizards among other mammals. Their absence would also destabilize the population of hawks, herons, owls among other mammals who depend on them for survival.

However due to our religious and cultural upbringing, we have chosen not to care about their critical role in the ecosystem; we have all been accustomed to trying to eliminate these species from our ecosystems by killing them at encounter. As a matter of fact, I can actually bet that each of you has at least seen a snake get hit on the head when they are just but minding their own business; trying to live the same way you also want to live. We would often be complaining that they got in our way instead of staying where there are supposed to be, yet our encounters with these marvelous animals we term as monsters are most often triggered by many anthropogenic factors.

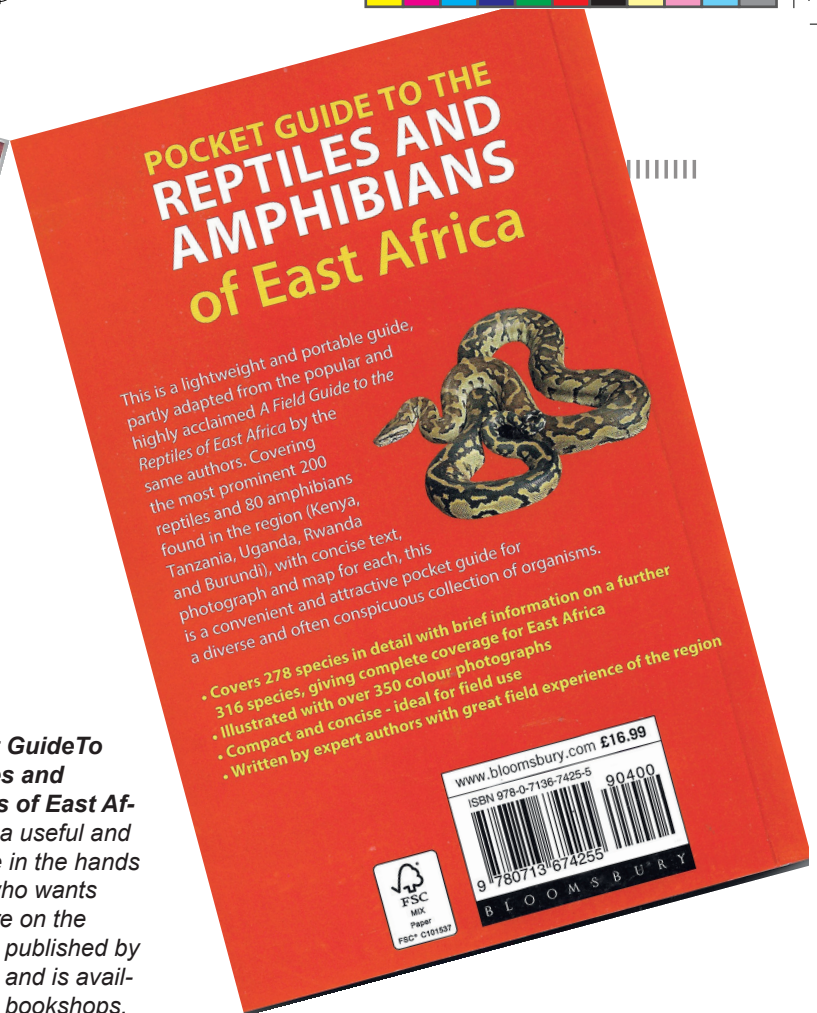
Humanity has triggered a cascade of events that has led to their habitats to keep shrinking each passing day while some have been rendered inhabitable. As a result, they have moved to your client's garden or your farmer's mango tree, or even your client's garage because perhaps that is the only place in their reach that they can find food and perhaps call home. As the interface keeps intensifying, there has been a need of experts who know about these species so as to at first protect humanity from dangerous and fatal snake-human conflict while at the same time safeguard these species from extinction.

## *The snake charmers*

It is for these reasons, that a group of veterinary students, loosely referring to themselves as 'Snake Charmers' was formed. This group does not charm snakes, as it happens in the Indian subcontinent among other countries where they appear to



*The Pocket Guide To The Reptiles and Amphibians of East Africa can be a useful and handy guide in the hands of anyone who wants to learn more on the subject. It is published by Bloomsbury and is available in local bookshops.*



practice seemingly dangerous tricks with dangerous species of snakes. It is a group of students that is passionate to learn about these unpopular species of animals and in so doing help educate and change perceptions about them. Led by Dr Nikhil, a masters degree student at the University of Nairobi studying wildlife health management, the group has been able to have regular visits to the National Museums of Kenya and the Snake Park to learn several things including the anatomy and biology of snakes, their behavior, how to handle them as well as the common diseases that affect them.

The greatest achievement has been the dissemination of the knowledge the group has acquired. The snake charmer group, in collaboration with Nairobi Snake Park, was able to hold a seminar at the University of Nairobi, Upper Kabete Campus, last year attended by both staff and students in the Faculty of Veterinary Medicine, where they were able to enlighten the Faculty on various aspects of snakes. This included demystifying various myths we hold against snakes as well as teaching the Faculty how to identify venomous and non-venomous snakes. There was even a practical session where there was a training on how to handle snakes, the demonstration having both venomous (Gabon viper and Puff adder) and non-venomous snakes.

### Other reptiles

The team's efforts don't only end with snakes; the Nairobi Snake Park has other reptile species that are still handled and managed passively by the team, including tortoises, turtles and chameleons. The team hopes to continue with its efforts of learning more about these species as there is a current need of expertise in the field more especially with the constant active need of solutions in mitigating the consequences of reptiles-human conflict.

The team also hopes to continue informing more veterinary students and the public at large on various aspects of snakes. To this end, there is a public session that is slotted some time this year at the National Museum of Kenya where the group will educate the public on various aspects of snakes.

### Snake farming

Currently, snake farming is becoming a lucrative business in Kenya, yet expertise is lacking on health and management of snakes. Some of these species of snakes are endemic to Kenya, and if veterinarians, amongst other wildlife professionals, do not take an active role in safeguarding their interests, they would eventually be extinct. Do you want to learn more about snakes among other reptiles? Contact the snake charmers, you might be able to learn one or two tricks on how to charm snakes.



# THE SLITHERY PATIENT

It was a lazy Thursday afternoon and the sun had chosen this very day to blaze. I was sitting in the clinic, in front of my desktop computer staring unseeingly at the screen. A man in a jungle green overall and black gumboots strode in and broke my stare.

"Habari daktari," he greeted me with a gummy smile.

"Niko salama. How may I be of assistance to you?" I responded gleefully. The afternoon was starting to look up at least.

"Chiloba is my name and I am from the World Greens Herpetology Centre here in Nairobi. We have a sick animal." He explained. "Herpetology...reptiles.. hm-mmm.." My mind was racing fast. "Sick animal.. Lizard? Tortoise? Snake? Or perhaps a croc..wow.." My mind was now on overdrive.

"Yeah..so now as I was saying," Chiloba continued. "We have a queasy, queasy snake, a puff adder in particular. Can you help?"

"Of course. We are a clinic for all animals, great and small." I responded, perhaps a bit unsure of that very statement. "What's the matter with the snake?" I inquired with utmost curiosity.

"He hasn't been eating well for the past few days. And he is not in hibernation for sure. We weighed him to-

day and he has certainly lost some grams." Chiloba explained.

"Yeah..that loss of appetite, the anorexia is never a good sign." I stated racking my mind on tentative diagnoses. "Can you come with me? I think it would be good if you looked at Puff Addy..that's what we call him.." he asked. I collected my tools of trade and called my loyal assistant Mutuma to join us as we set out for World Greens.

The drive to the Herpetology Centre took us all of 15 minutes. World Greens Herpetology Centre was set in a massive self - imposing building in the middle of a forested patch. The building was crescent-shaped and five-storied. It had a smooth external finishing with a forest-scape painting engulfing the entire building. It was a definite work of art. One giant mural of a building. Mutuma and I could not help but stare in pure amazement, we were dumbfounded.

"Has this place always been here?" I asked after I found my voice. "Yep, for about 13 years.." Chiloba quipped nonchalantly. "I must say I am impressed, to say but the least. But back to business, where is Puff Addy?" I stated.

Chiloba led us into the building, into the elevator and out on the third floor. "The snake section is on this floor and Puff is right here," he said as he opened a door into a room with several large glass cases. "That's Puff." Pointing to a still yellow-creamy snake. "Ok." I said, my mind running amok on how we would proceed with examining the snake. Fortunately the center had trained snake handlers. Chiloba called in the two assigned to the snake section.

They got Puff out of the glass case and gently placed him on the stainless steel examination table. "Mutuma, bring out a pair of gloves and a torch for me, will you." I instructed. With one handler hold-



A puff adder in the wild



ing the distal part of the snake, and the other holding the head with the mouth open, I was able to visualize the interior aspect of the mouth. "I see them, do you?" I asked Chiloba, pointing to several ulcerative lesions on the floor and roof of the mouth. "I believe that is the cause of the anorexia..the loss in appetite, that is" I explained. "We shall clean them daily for five days with a solution of dilute betadine. We shall also give daily antibiotic injections and also supportive therapy in the form of fluids..a drip if you may.." I went on.

Mutuma who was listening to my explanation swung into action and brought out the therapeutic items I had mentioned. I began by cleaning the mouth with cotton wool wrapped around mosquito forceps and dipped in the dilute betadine solution. I repeated this severally. In the middle third of the snake, in its abdominal cavity, I administered the antibiotic and part of the 500ml drip. "We have finished with him for today. We shall return tomorrow." I informed Chiloba and team. The snake handlers skillfully picked Puff and returned him into his glassy abode. They then placed the heavy lid onto the glass case securing the snake inside. The snake re-coiled slowly as if summoning all his energy.

"At least he is moving now.." Stated Chiloba excitedly. "That's a definite good sign." "We hope for the best." I replied, removing my gloves in preparation for the journey back. Mutuma packed our items of work into the brown leather bag. Chiloba then returned us to the clinic in the rickety World Greens – branded jalopy.

It was a complete turnaround in a matter of five days of daily treatment. Puff had regained his appetite fully and he had begun to gain weight. "Thank you daktari. Puff is certainly back to himself," Chiloba thanked us gleefully on our last day of Puff's treatment, "We weighed him today and there is an addition of some grams to his kilos since last week. We couldn't be happier."

"All in a day's work, all in a day's work." I replied looking at Puff with great contentment. I was satisfied with his recovery. Our efforts had not been in vain. Mutuma collected our now famous brown leather bag and we walked out of the snake section accompanied by Chiloba. He saw us off to the exit of World Greens.

"It was great working with you," he said tightly grasping my hand in a handshake, "You are welcome to visit the facility anytime." "Thank you for the invitation, we shall definitely visit. We shall be on our way now, good-bye." I responded, having released my hand from the tight grip. He bade us good bye as we walked to our clinic van. We gave World Greens a final look and drove off to the clinic hoping for yet another unique, mind-boggling case.

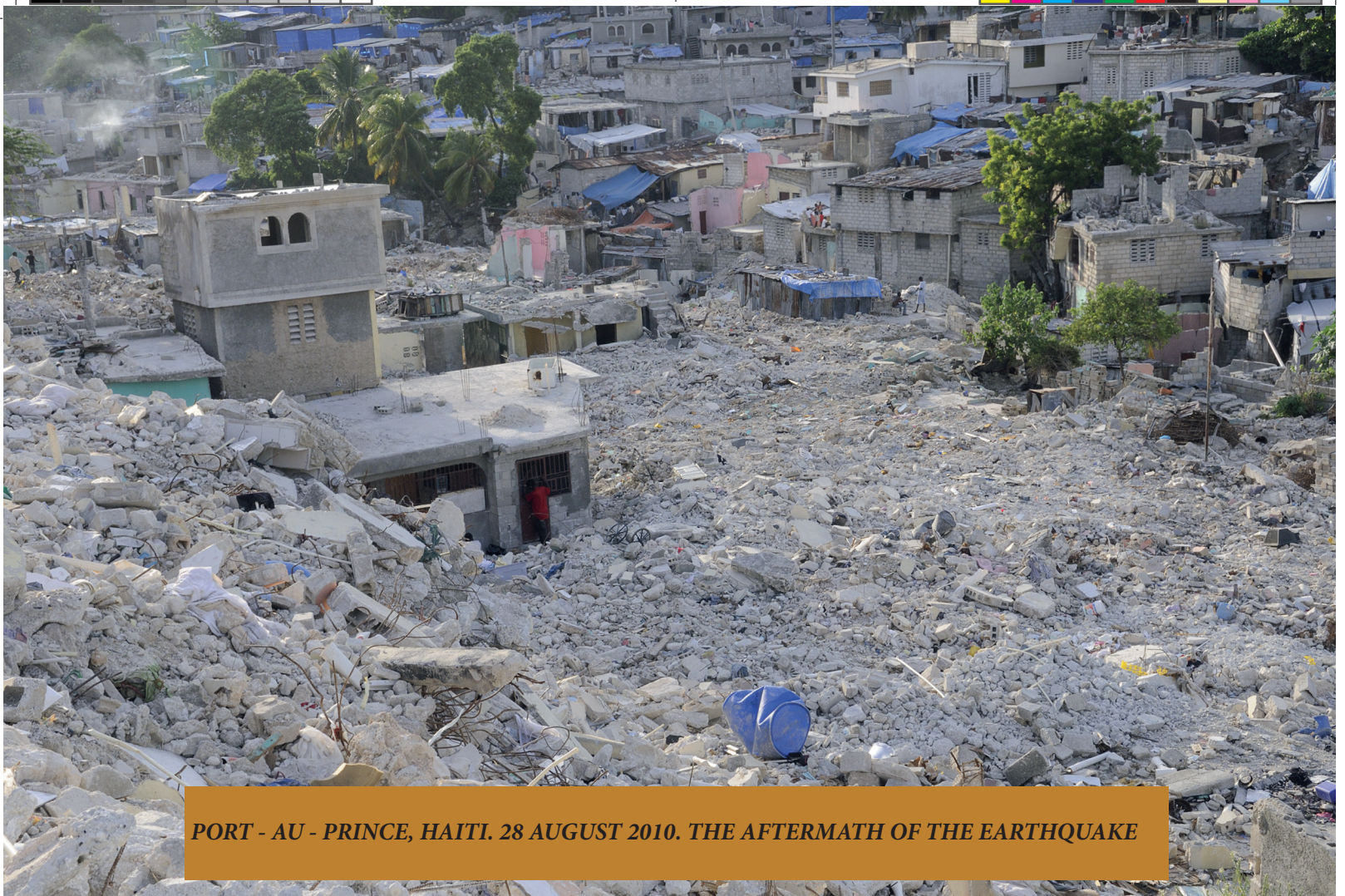
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*PORT - AU - PRINCE, HAITI. 28 AUGUST 2010. THE AFTERMATH OF THE EARTHQUAKE*

## We must not forget animals when natural disasters strike

By Steve McIvor, CEO World Animal Protection.

Eight years ago, at just before 5pm on 12 January, dogs began frantically barking all over Haiti. Seconds later the ground shook as a massive earthquake unleashed its tremendous power killing over 240,000 people. Such massive loss of life, was heart-breaking and incomprehensible. The earthquake caused catastrophic devastation in the capital city, Port-Au-Prince. Millions of people lost their homes and their way of life, in a country that was already the poorest in the Americas.

International humanitarian agencies and governments quickly dispatched human aid relief into the country but the Haitian government also needed help with the thousands of animals on the island that were injured and dying. Just 72 hours after the island was violently shaken, World Animal Protection vets were on the ground.

Looking out of the window while flying in to Port-Au-Prince, our experienced vets could see the cataclysmic devastation the island had suffered. They knew it would be the toughest mission they had ever embarked on. As soon as the wheels touched down, the priority was to set up mobile veterinary clinics to bring relief to the maimed and injured animals suffering in the quake's aftermath.

The mobile clinics raced from one site to another, meticulously working out how to reach as many animals as possible. To let Haitians know that help was on the way to their animals, the team came up with an innovative solution – the day before they were due to arrive at a village, one of them

would drive along the precarious roads shouting messages through a megaphone – not very high-tech, but effective. Every morning a long line of people would form with cats, dogs, pigs, cattle, horses and goats.

## ANIMAL WELFARE

It quickly became apparent that it would be impossible for one organisation to help such a huge number of animals, so we collaborated with twenty other animal welfare organisations to form the Animal Relief Coalition for Haiti (ARCH). This enabled us to pool resources to maximise the number of animals we could help. Working flat-out, 70,000 animals were treated, many of whom would certainly have died without the help they received.

In 2010 most of Haiti's animals had never seen a vet, vaccines were scarce and lack of refrigeration destroyed any vaccines that had been previously available. Rabies and anthrax were just two of the diseases that were vital to control, to stop their spread to the human population.

Saving lives was the immediate priority eight years ago, but we also helped Haiti prepare for the long-term rehabilitation of animals and worked alongside the Haitian government and vets to deliver a better life for Haiti's animals long after all of the aid organisations had gone. Haiti is now much better prepared to care for its animals when disaster strikes again.

1 billion of the world's poorest people, including many Haitians, rely on their animals for food, transport and their livelihoods. As a result of our work, governments have begun to understand how crucially important it is to protect animals to help their

people before the earthquake, flood, hurricane or drought hits. We've worked with many of them to install typhoon-resistant shelters and other prevention and preparedness solutions we have developed over the years for farm animals which decrease animal suffering in a disaster and increase a community's ability to secure their future livelihoods.

Five years after the Haiti quake hit, we were also able to secure an historic agreement from the United Nations Member States to measure the impact on animals in disasters as part of its Disaster Risk Reduction. This will mean more animals will be better protected from mother nature, which in turn will protect the well-being and economic survival of communities in danger zones around the world.

12 January 2010 was one of the deadliest days in the history of the world. 2017 brought yet more destruction and chaos to the Caribbean as hurricane ploughed in to the islands. With the frequency and intensity of disasters increasing due to climate change, it's absolutely critical that governments in danger zones continue to do more to prepare for the inevitable by ensuring the protection of animals in their national emergency plans. World Animal Protection is working on this life and death issue with countries around the world as a matter of urgency. So many people in so many countries rely on their animals for their own survival.



*Forest fires  
are deadly for  
animals*

**TIME OUT**

**CROSSWORD - WILDLIFE**

By Dr. Isaiah Nchagwa Chacha

Identify 31 wild animals from the crossword below:

R	O	E	L	I	D	O	C	O	R	C	A
H	A	N	T	E	L	O	P	E	U	A	R
I	I	M	P	A	L	A	S	F	D	T	B
N	O	P	I	O	L	A	F	F	U	B	O
O	E	O	P	A	R	D	O	A	K	M	C
C	L	M	O	O	S	E	X	R	A	O	D
E	E	L	K	B	T	B	O	I	R	N	R
R	P	X	I	I	I	A	S	G	B	K	A
O	H	Y	D	R	G	T	M	U	E	E	P
S	A	R	K	D	E	G	N	U	Z	Y	O
S	N	O	I	L	R	A	E	B	S	A	E
A	T	U	D	O	G	A	N	E	Y	H	L
R	U	A	S	O	N	I	D	E	E	R	S

Answers to the crossword are on page 51





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- No water required
- Works against all life-cycle stages
- Safe for user and animal

- Sterilizes female ticks<sup>1</sup>
- No withdrawal period required for milk and meat
- Residual effect for lasting protection<sup>4</sup>
- Works against all life-cycle stages
- Spray race
- Hand spray
- Safe for user and animal

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# ANTIMICROBIAL RESISTANCE PROJECT IN KENYA: Action today, benefit tomorrow

*If no action is taken today, by 2050, Resistance to Antimicrobials will kill more people than cancer*

## **What are Antimicrobials?**

Antimicrobials are natural or synthetic agents used to stop or kill infectious micro-organisms (bacteria, viruses, fungi and parasites) in humans, animals and plants.

## **What is Antimicrobial Resistance?**

Antimicrobial resistance (AMR) refers to a situation where these micro-organisms become unresponsive to antimicrobials – medicines which they were initially responding to. With AMR, this means that the disease causing organisms responds poorly or not at all to medicines that they were initially responding to resulting in untreatable diseases, prolonged hospital care or deaths and high cost of treatment.

## **How does AMR impact on public health?**

Today, global annual deaths in humans from AMR related causes is approximately 700, 000 people. By 2050, this figure may increase to approximately 10 million deaths every year. The cost to global economies will be more than USD 100 trillion in losses which will be more than 50 times the expected economic output of Sub-Saharan Africa.

## **How does AMR impact on Agriculture and food security?**

According to FAO, livestock products account for 78% of the value of the top five agricultural food products- valued at US\$ 822 billion. Livestock contribute up to 50% of the proteins consumed by people. In Kenya, seven million households keep livestock which contribute significantly to food and nutrition security. AMR related animal deaths and reduced livestock production will reduce food availability and access for the entire population.

## **How do micro-organisms become resistant?**

Over use and misuse of antimicrobial drugs in humans and in agriculture (plants and animals) speed up the development of AMR. Resistant micro-organisms can be transmitted between animals, animal to people, people to animals, people to people and can be shed in the environment. Resistant micro-organisms can move from one geographical region to another.

## **What is the current AMR situation in Kenya?**

It has been established that Kenya is already experiencing increasing levels of antimicrobial resistance affecting micro-organisms responsible for common cold, pneumonia and diarrhea among others. Due to a lack of systematic surveillance, the exact burden of antimicrobial resistance in Kenya is unknown.

## **What are the challenges to addressing AMR?**

Some of the current barriers to addressing AMR include (i) limited awareness of its implications in human and animal health among the general public, policy makers and animal and public health practitioners (ii) inadequacy of or non-compliance with legislation governing manufacture, distribution and use of antimicro-



## ANTIMICROBIAL RESISTANCE

bials (iii) poor animal and plant husbandry practices (iv) poor surveillance systems.

### What is the best way of addressing AMR?

AMR is a global problem and therefore requires global response. However, every country, sector and department requires to define specific strategies to address each of the challenges. AMR problem cannot be addressed by one sector hence the need for multi-sectoral coordination (this is called “One Health” approach) to build consensus and synergies in addressing diverse underlying factors that contribute to development and prevalence of AMR.

### What can the members of the public do to mitigate AMR?

No action today, no cure tomorrow! There are simple things that can be done to reduce the escalation of AMR:

1. Do not insist on getting antimicrobials unless when it is absolutely necessary
2. Only use antimicrobials that are prescribed by a qualified persons
3. Always ensure a full course of complete treatment is administered or used when recommended
4. Veterinarians and animal health care givers should prescribe antimicrobials responsibly
5. Reduce the incidence of infection through effective sanitation, hygiene and infection prevention and control
6. Follow good animal production health and hygiene practices
7. Reduce the need for antimicrobials through preventive measures such as vaccination.

### What is FAO doing about AMR?

FAO has supported Kenya through Fleming Fund (Department of Health, United Kingdom) in the development of two important documents viz: the AMR Policy and the National Action Plan (NAP) (see below). Whereas the Policy provides the legal framework for action, the NAP aims to provide a coherent and systematic framework and priority actions to contain the emergence and spread of AMR. A study to map the veterinary medicines supply chain, challenges and barriers to compliance has been initiated in collaboration with the DVS following which a systematic surveillance approach for AMR will be implemented.

*Antimicrobial sensitivity testing in a petri dish*





By Dr Kenneth Wameyo

# What it is like to treat sick animals in the face of a mounting antibiotic crisis

They say you should never work with children or animals, and when it comes to medicine, the challenges are certainly very similar. Like babies, animals cannot tell you they're sick – you normally have to infer it from a loss of appetite or a change in behaviour.

But while paediatricians diagnose and treat just one species, veterinarians take care of any number of creatures – all with different needs and conditions. And this also varies between regions with different diseases prevalent in different parts of the world.

In places like Kenya, where I work, antibiotics have been crucial in managing a whole range of animal illnesses. Since the cause of disease in animals - from chickens to cattle and swine - is often bacterial, we simply could not manage without them.

If it were not for antibiotics, our flocks would be quickly wiped out from any of the otherwise fatal infections, causing devastating losses to the estimated 800 million smallholders in developing countries who rely on livestock production for their incomes.

The latest guidelines from the World Health Organization (WHO) warn against using antibiotics for growth promotion in animals to preserve critical drugs for human treatment.

But Kenyan farmers do not routinely use antibiotics in this way, not least because they can be too expensive or difficult to access. Rather, they use antibiotics in the hope of keeping away disease. This is why when it comes to caring for animals in the face of growing levels of drug resistance and superbugs, we must look to the reason animals fall sick in the first place.

One of the biggest challenges, especially when it comes to the kind of small-scale farming we have across sub-Saharan Africa, is hygiene. For example, we often find chickens are raised outdoors and in close proximity, which means they are more susceptible to diseases from wild birds that then quickly spread throughout the farm.

Farmers also find it difficult to keep their yards and coops constantly clean. Because of this, many see the solution in adding antibiotics to chicken feed before they get sick to stave off disease. However, if we could improve hygiene in smallholder farms, we could slash our antibiotic use because the animals would be in better general health.

One opportunity to do this is by making the case for investing in vaccinations. Farmers, especially in developing countries, are often reluctant to spend money on vaccinations to solve a health problem that has not yet occurred. But if we help them to properly understand the long-term benefits, it will not only save drugs for those who really need them but also the lives at risk from drug-resistant disease as well.

This is an example of how the entry and spread of disease can be controlled through good biosecurity practices in the first instance, leaving antibiotics as a secondary resort as needed.

Another example is through encouraging farmers and livestock producers to properly follow regulations that set out how long to wait after treatment before using an animal for food produce.





## ANTIMICROBIAL RESISTANCE

This is known as the withdrawal period and is designed to ensure antibiotics have been properly absorbed by the animal before they are used for meat, milk or eggs. This time buffer reduces the risk of produce contaminated with antibiotics being eaten by humans, which might contribute to increasing levels of resistance.

Finally, we also see farmers using the same antibiotic in different formulations to treat the same complaint. We must do more to support them to use the right treatment for their animals and avoid giving duplicate doses by improving diagnostic tests. After all, this wastes not only precious drugs but also money they cannot afford.

By taking samples, sending them to the lab and properly diagnosing the problem, we can know what organism we're dealing with and treat it appropriately. So, what we are trying to do in Kenya is to raise awareness among veterinarians and farmers not only about responsible antibiotic use but also about the ways in which they can improve

the health and wellbeing of their animals to avoid disease as much as possible.

Through conferences and educational material, we keep relaying the messages to veterinarians and to farmers about how best to manage antibiotic use, and the better alternatives on offer.

Achieving this understanding is essential because we cannot risk facing a ban on these vital drugs otherwise. Antibiotics remain a life-saving treatment for humans and animals alike, and our work as veterinarians would be futile without them.

Dr Kenneth Wameyo is Honorary Secretary of the Kenya Veterinary Association (KVA).

(This article is a reprint from Reuters).

*Cattle graze in a field: AMR can be deadly for such a herd*





# Dog maternity: What you need to know

By Dr. Isaiah Nchagwa Chacha  
isaiahnchagwa@yahoo.com

## Introduction

Dogs, like humans, needs care and attention before, during and after delivery. In dogs, delivery is called whelping and they go through labor just like any other animal. The female dog (bitch) gives birth to a litter (more than one offspring) at a go and the number of puppies may vary depending on the mating duration or breed of dog among other several factors. Canines usually experience few cases of dystochia (difficulties during parturition) and bitches generally have a good mothering ability. It is therefore important for a dog keeper to be aware of the maternity process that a bitch goes through so that in case of an anomaly, mitigations can be taken early and quick.

## The estrus cycle

Dogs are seasonal breeders and a female dog (bitch) will come on heat (urge to breed) after going through phases of estrus cycle akin to the menstrual cycle in humans. The estrus cycle of a bitch on average lasts between four to six months depending on the breed of dog as opposed to monthly in humans. It is advisable to vaccinate your bitch before mating or at least 6 months before pregnancy so that the puppies will acquire strong maternal immunity.

The bitch experiences 5 stages of the estrus cycle namely:

- a. Proestrus — This is the stage just before mating. It is marked by blood spotting from the vulva that will be noticed as light watery blood spots on the floor around the bitch. As opposed to humans, bitches will ‘menstruate’ before ovulation takes place. The bitch

will spot for an average of 9 days. At this stage, the males will ‘hang around’ courting her but she will not allow them to mount.

This stage is important as it helps you plan for mating. During this period, discuss with your vet and identify the correct male to breed your bitch.

- b. Estrus — This stage also lasts for an average of 9 days whereby the bitch allows the males to mount and mating takes place.

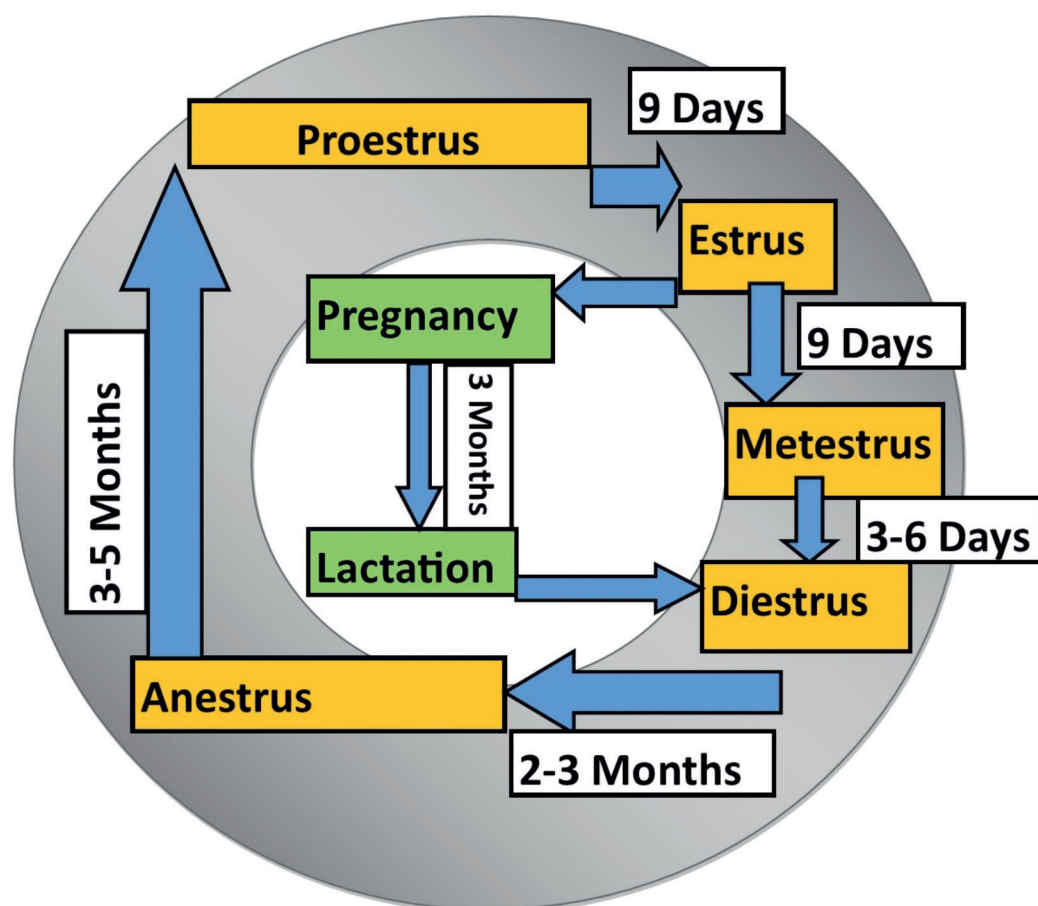
These two stages are called heat; it is usually advisable to let your bitch by-pass the first two heats (seasons/cycles) of her life and breed in the third heat. This is critical as it gives her time to grow fully, develop the reproductive system and also to mature hormonally and physically.

When mating takes place successfully then the normal cycle is cut and what follows is pregnancy, lactation and another cycle takes place about 4 – 6 months later after delivery. If mating does not take place, then the cycle proceeds to:

- c. Metestrus, then
- d. Diestrus, and sometimes
- e. Anestrus (no cycling, infertility or during pregnancy and lactation) and back to proestrus all over again.

Apart from the behavioral characteristics of the bitch, these stages can be diagnosed by the veterinarian performing a vaginal cytology.





A graphic representation of the dog's reproductive cycle

### Pregnancy diagnosis

It is important to be certain that your bitch is pregnant so as to give her special attention and also inform your vet for delivery preparation and advice where necessary.

The vet can detect pregnancy by abdominal palpation from around week five of pregnancy although this may be difficult in overweight or uncooperative bitches. Ultrasound may also be used from day 21 of pregnancy. Ultrasound is of more significance especially to assess the viability of the neonates. From day 45 of the gestation period, radiography (x-ray) can be used to diagnose pregnancy. At this age, the neonate's bones are dense enough to be observed by radiograph and there is no likelihood of eliciting teratogens (embryonic malformations).

Pregnancy diagnosis can also be achieved by the observation of an enlarged abdomen and developing of mammary glands which produce milk when squeezed and by combining with a history of having observed the dogs mating.

### Pregnancy

The gestation period of a dog ranges from 58 – 65 days with an average of 63 days. When pregnant, the bitch should be fed a balanced complete meal. Small frequent portions are recommended since the pregnant womb fills the abdomen and presses against the stomach, reducing the capacity of the stomach to accommodate a single, large meal. It is not necessary to give special supplements so as to challenge the mother's body to produce nutrients and supply to the neonates on its own as is required.

About 3–5 days before delivery, the bitch will start nesting by digging or attempting to dig, collecting soft materials and padding the intended maternity area. When this is observed, please direct your bitch to a convenient maternity area that is secure, warm, well ventilated and with no interfering activities. Generally, dogs would want to be solitary when whelping and therefore they would choose a quiet, dark place. It is also important to keep off and let her go through the process alone and only observe periodically in case of a dystochia.



*New born puppies can't wait to get going on the milk*

### Whelping

In about 24 hours to whelping the bitch will show a swollen vulva, start panting, become anorexic, restless and there will be a clear mucous discharge from the vulva. She will also continue nesting in preparation for the arrival of the puppies. After whelping the first puppy, other puppies should come out after about 15 to 30 minutes thereafter. If it takes more than 1 hour before delivery of a subsequent puppy, you should be concerned and you should inform your vet immediately.

The bitch will nurse delivered puppies by licking them to clear membranes and excess fluids. The puppies should start walking around looking for the mother's nipples to suckle. Once all the puppies are delivered, the bitch will relax and settle. Ensure the puppies start suckling colostrum in about an hour after delivery is complete.

### Did you know?

- That a bitch can whelp a litter of puppies which have different sires? Yes, where several males bred with the bitch, puppies may be borne by a single bitch at a go and may have different fathers — one litter with puppies of different parentage.
- That the penis of a dog has a bone? Yes the dog's male reproductive organ has a bone called baculum or os-pennis. This bone is necessarily important during intromission (penetration). The dog usually

mounts and intromits before total erection and therefore this bone helps his organ to stay straight and focused.

- That when dogs mate, they will tie onto each other facing different directions a phenomenon known as 'copulatory tie'. The tie is effected by a structure on the penis called bulbus glandis that swells and locks the male in the female. This is important to prevent the male's spermatozoa from leaking out if not locked so as to be slowly sucked in by the bitch's system. This would happen due to the fact that the female vaginal tract is ventrally inclined outwards and spermatozoa would thus flow out if the male withdraws immediately after ejaculation.

- That it is normal for a dog's penis to have pus at its opening? A thick yellowish to greenish small volume discharge in male dogs produced at the preputial sheath of the penis is normal. This material is called smegma and it is present in both male and female mammalian genitalia (including humans) at different presentations. The amount can vary from undetectable to a drop. This fluid is made up of cells and lubricant that surrounds the penis inside its sheath. It helps to clean the genitals, lubricate the space between the foreskin and the penis and the glans and makes them moist.



## ANIMAL FUN FACTS

1. Octopuses have three hearts.
2. Butterflies can taste with their feet.
3. Cats and horses are highly susceptible to black widow venom, but dogs are relatively resistant. Sheep and rabbits are apparently immune.
4. Sharks kill fewer than 10 people per year. Humans kill about 100 million sharks per year.
5. Wild dolphins call each other by name.
6. Young goats pick up accents from each other.
7. Humpback whale songs spread like "cultural ripples from one population to another."
8. Horses use facial expressions to communicate with each other.
9. Elephants have a specific alarm call that means "human."
10. Squirrels can't burp or vomit.
11. Owls don't have eyeballs. They have eye tubes.
12. Animals with smaller bodies and faster metabolism see in slow motion.
13. Dogs' sense of smell is about 100,000 times stronger than humans', but they have just one-sixth our number of taste buds.
14. Male gentoo and Adelie penguins "propose" to females by giving them a pebble.
15. Azara's owl monkeys are more monogamous than humans.
16. Barn owls are normally monogamous, but about 25 percent of mated pairs "divorce."
17. Reindeer eyeballs turn blue in winter to help them see at lower light levels.
18. A human brain operates on about 15 watts.
19. Warmer weather causes more turtles to be born female than male.
20. African buffalo herds display voting behavior, in which individuals register their travel preference by standing up, looking in one direction and then lying back down. Only adult females can vote.
21. If a honeybee keeps waggle dancing in favor of an unpopular nesting site, other workers headbutt her to help the colony reach a consensus.
22. Honeybees can flap their wings 200 times every second.
23. The claws of a mantis shrimp can accelerate as quickly as a .22-caliber bullet.
24. A single strand of spider silk is thinner than a human hair, but also five times stronger than steel of the same width. A rope just 2 inches thick could reportedly stop a Boeing 747.

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# The uncharted course in veterinary practice

By Dr. Pascal Juma

To the average Kenyan, a vet is a person who treats cows. Yes, cows. Only cows. That's why the upper Kabete campus at the University of Nairobi is nicknamed "Kabete Ng'ombe", to differentiate it from the lower Kabete campus, aptly nicknamed "Kabete Pesa" since the campus hosts the school of business. Business is associated with money. Money is associated with banks. Banks are where graduates of Kabete Pesa are expected to start looking for jobs upon graduation. That's where they allegedly belong. So even as a student, studying in the lower Kabete campus gives you a sense of belonging. Belonging to the right side of life. Belonging to a better future.

But wait a minute, did I just say "to the average Kenyan?" These nicknames for the two campuses were actually coined by university students. University students are not average Kenyans, well at least not as far as passing exams is concerned. Whether by Matiangi standards or whichever other standards, you have to pass exams way above average to qualify to be a university student, especially a regular one in Kenya. I don't know exactly when the nicknames were coined or who did so but I strongly suspect it was a student from Kabete pesa. Only a student from Kabete pesa could *coin* such nicknames. You see what I did there?

Moving on swiftly, what am I saying? That Kenyans' (average or otherwise) knowledge about veterinary practice is limited to treating cows. Yes, that's the empirical truth. Many are the times I have introduced myself to friends individually or in a group as a veterinary surgeon and most could not resist the urge to ask "hapa Nairobi unatibu ng'ombe gani?" Or some would be blunt and just ask "una-

fanya nini Nairobi, huku hakuna ng'ombe?" Chances are, this same person who is asking such a not so intelligent question took milk tea in the morning. Chances are he feasted on nyama choma over the weekend. Chances are he had sausages or eggs for lunch (assuming he could afford). Chances are he'll drop by the supermarket in the evening and pick frozen chicken and take to his family for dinner. But he is not stupid, right? Milk, meat, eggs and all those products associated with animals (did I hear someone whisper the word "ng'ombe?") are found in supermarkets, so why should a vet be in Nairobi? I think my point is beginning to sink or stink. Maybe has sunk much deeper. Or is stinking of conceit.

Be that as it may, ladies and gentlemen, I just want us to appreciate the value of public health. Yes, public health is largely a domain of veterinary practice. There's a common saying that once in your lifetime, you may need a lawyer, an engineer, an architect, a plumber etc. but every day, thrice a day you need a farmer and a vet. Even if you work in a bank (I swear I'm not targeting Kabete pesa graduates), you'll need tea in the morning. Tea here refers to milk tea, not strong tea. And if it has milk in it, trust me a vet has a key role to play in ensuring that the milk you take is safe for human consumption.

By the way, how many of you know about the roles of Kenya Dairy Board? If your lunch had any animal product in it e.g. beef (I must bore you with the hashtag Kabete ng'ombe), trust me a vet had to ensure that the meat you feasted on was free from zoonotic diseases such as anthrax. Even if you don't do red meat and insist on chicken, it's the vet who ensures that your chicken is free from diseases such as birds flu. It's the vet who ensures that your eggs are free from salmonellosis, another zoonotic



disease. For the few who might not know, zoonotic diseases are those diseases that can easily be transferred from animals to humans.

But there's more to public health than control of zoonotic diseases. For example, there's pest control and sanitation. Again, a great indictment on the general populace that is the Kenyan people, most do not know that only a vet is permitted by law to carry out professional pest control services. Pests such as mosquitoes, bedbugs, cockroaches, rats and mice, biting midges, ticks, lice, fleas just to mention but a few are of significant public health importance.

Who doesn't know malaria? What about the now infamous chikungunya virus at the coast or dengue and yellow fever? When I walk around estates in Nairobi nowadays, it's common to see posters about pest control services but do the masses bother to inquire the training or qualification of the pest control service providers? Pest control is a unique sector of veterinary practice, the uncharted course. It is never enough to know the right pesticide to use against a particular pest. Knowledge on the active ingredient of the pesticide, mode of action, safety and side effect, life cycle and bionomics of the pest, history of pesticide use, preferred method of pest control, just to mention but a few are vital to effective and safe extermination. Pest control must be done with clinical precision and using the right method. Fumigation for example is one of the methods used in pest control but the word has been so much misused

to the point that again, the average Kenyan knows fumigation as the other word for pest control and not just a method. People don't even know what the process of fumigation entails.

As a public health, pest control and sanitation enthusiast and practitioner, it still amazes me that some of my clientele get surprised to learn that I am a veterinary surgeon. Some think a vet should either be treating cows in the village or should own a veterinary clinic in some upmarket suburb of the city, or run an Agroveter shop. From my years of practice, I can authoritatively report that Kenyans are yet to appreciate the value of public health, pest control and sanitation, especially in the absence of a disease outbreak. The average Kenyan needs a cholera or typhoid outbreak to know how dangerous houseflies are. The average Kenyan would rather be bitten by a mosquito until he succumbs to malaria than call a pest control expert to exterminate mosquitoes in his house. The average Kenyan would rather buy a cheap pesticide when infested with bedbugs, than to ask for the contacts of a professional pest control service provider. As I write this article, a client has just called to ask me which is the right "dawa" for bedbugs. It's the Kenyan culture. They think it's all about knowing the right dawa, as they prefer to call it. But why do we choose to be average Kenyans? Why don't we appreciate and embrace professionalism in service delivery? When all is said and done, the million dollar question is, do you still want to continue being an average Kenyan? Over to you good people.

## Did you know?

1. That Kenya Veterinary Association (KVA) safeguards Animal Health and Human Public Health?
2. Misuse of antibiotics in animals poses a health risk in humans after consuming their products?
3. More than 75% of Kenyan population are livestock owning communities?
4. More than 95% of Kenyans owns an animal?
5. Owning a pet reduces chances of getting into depression?

Now you know!

To learn more about Kenya Veterinary Association (KVA) check out our Animal Focus Magazine.

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COMMENTARY



# Did I hear vet voices on vet issues in parliament?

Being passionate about what you are doing is a key to success. Being a vet and knowing the versatility of this noble profession I have been out hunting for vets in unorthodox fields for example politics, management, comedy, journalism or in other key positions where they can stand out in a “passionometer” scale.

Elected politicians have a great input in the formulation, debating and passing of laws that govern the land. It is therefore a great privilege for a vet to be in parliament or any other law making authority. Not many people understand the role of vets in the public health, nutrition, trade and many other facets of life so when a vet is elevated to such a level it brings a sense of hope that good tidings will follow soon.

But it is worth noting that most vets in politics have been buoyed into the minds of the electorate through the practice of veterinary medicine. When you treat a domestic animal or a companion animal you by extension treat the society – I love the nobility that the profession bestows on us animal health practitioners. Such nobility should follow those who venture into the murky field of politics. To speak objective sense in a league where subjectivity and outright sycophancy so easily entangle the sharpest of minds to the disappointment of the masses – you can name so many if you engage your memory.

A vet in politics is not a new thing; in 1867 we had a vet Dr. Simon Fraser Tolmie who was the Premier of British Columbia, Canada and thereafter joined elective politics in 1917 as the MP for Victoria City. He successfully served his people and got re-elected four times. He served in key committees that formulated policies that set the veterinary sector on a strong foundation. This has catapulted Canadian veterinary sector onto a pedestal that makes it admirable to all. His story is a great inspiration on how veterinary minds can treat societal ills from the policy aspect. Last year in America two vets Ted Yoho and Kurt Shrader won seats in Florida and Oregon districts. I am all ears to see what these two and others will do as a social responsibility to our noble profession – veterinary medicine.

The Kenyan parliament has played host to a number of policy makers who are veterinary doctors. Dr. Noah Mahalang'ang'a Wekesa was the MP for Kwanza constituency; he later held various ministerial positions. Dr. Joseph Wamukoya ones served as a Member of Parliament for Matungu constituency and also served as an Assistant Minister during KANU regime. Dr. Paul Otuoma made history by trouncing the then Vice President Moody Awori for the Funya constituency seat. This victory branded him positively and shortly his star shone brightly that he could easily push for any policy idea.

Dr. Victor Munyaka, humbly started his vet carrier through agro vet business in Machakos and won hearts of many who voted for him in 2007 and 2013 as their Machakos town. The youthful Dr. Nuh Nassir Abdi served Bura constituency between 2007 and 2012 and is currently the speaker for Tana River County assembly and also the chairman for the County Assemblies Forum (CAF).

The above list of veterinary doctors in parliaments paints a very rosy picture of representation of the profession. Indeed many laws have been amended or passed during their tenure in the parliament; thanks to their support during the debates. The Veterinary Surgeons and Veterinary Paraprofessionals Act stands out as a key achievement of the current and former occupants of the parliament; to this we are very grateful. But we cannot forget vets like Dr. Wanga Christopher; a vet policy advocate in his own league, the Kenya Veterinary Board and other stakeholders that supported this worthy course.

Now; weighed on their own “passionometer” scale am yet to see a vet politicians passionately pioneering a vet issue with such a passion in the caliber of Hon. Mututho on Alcohol, Hon. John Michuki on Road Safety or Hon. Joe Nnode on Bank Interest Rates. I yearn for such a passion to flow through a vet politician, to make the public appreciate the mantra of veterinary surgeons, to leave a vet mark in the minds of populace and to make the public grateful for our pivotal role..... I challenge vets venturing into Kenyan politics to up their game on a “passionometer” scale in as far as vet issues are concerned.

By Dr Joseph Othieno, a passionate vet journalist



## KENYA ANIMAL GENETIC RESOURCES CENTRE

*For Superior Kenyan Animal Genetics*

### KENYA ANIMAL GENETIC RESOURCES CENTRE – PROFILE

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The Kenya Animal Genetic Resources Centre (KAGRC) is a State Corporation within the Parent Ministry of Agriculture, Livestock and Fisheries. It is the successor to the former Central Artificial Insemination Station (CAIS) which was established in 1946 as a Livestock semen production and distribution station. KAGRC which came into being through a Gazette Notice (No. 110 of 5<sup>th</sup> September, 2011) has a much larger expanded mandate than its predecessor. The mandate includes production, preservation, distribution and conservation of Animal Genetic Material (livestock Tissues, DNA, Semen and Embryos of all livestock and emerging livestock species in Kenya) for both research and breeding. It includes rearing of breeding animals for production of high quality disease free germplasm to meet national demand and surplus for export.

KAGRC has increased its semen production over the years from 563,000 straws at inception to the current 1,137,000 straws in 2016. It aims to increase production to 1.5 million straws by next year if it can maintain this trend. The organization has a stud of 130 animals with 80% in active production. The breeds include Friesian, Ayrshire, Guernsey, Jersey, Boran and Sahiwal. KAGRC semen is



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Email: [info@kagrc.co.ke](mailto:info@kagrc.co.ke), Web: [www.kagrc.co.ke](http://www.kagrc.co.ke)

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*“Let’s all help to achieve a safe and sustainable environment”*

of high quality and meets International Standards. The organization has now embraced genomic evaluation of its bulls to ensure farmers get reliable information for breeding purposes.

In line with the Government Policy of bringing services closer to the people, KAGRC has opened up regional Centres for distribution of its products. These Centres' are located at Sotik in Bomet County, AHITI Ndomba in Kirinyaga County and VIL Eldoret in Uasin Gishu County. The Centre also operates liquid nitrogen plants for production of Liquid Nitrogen used in semen preservation. KAGRC is currently focusing on capacity building for its staff as it prepares to enter into in-vitro and in-vivo embryo production and preservation to meet its customer demands. The organization is ISO QMS 9001-2008 certified and is in the process of transiting to ISO QMS 9001-2015.



Ayshire bull Code 2009 – VOLTAGE

Friesian Bull Code 4029 - Access

**Dr. Atsiaya H. V. J.**  
For/ Managing Director



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# VETERINARIANS IN LEADERSHIP

Veterinarians globally have excelled in their sphere of professional practice showing exceptional leadership skills in running their private clinics or public assignments. In most cases what society expects and how veterinarians respond does not necessarily correspond since most expectations are outside the scope of practice. Most members of the public look upon veterinarians as people who will cure their animal when it is ill, repair traumatic injuries and advise on its general wellbeing and they are often shocked to hear that a veterinarian is capable of carrying out other tasks. More often than not when a veterinarian seeks to undertake extra veterinary assignments the public would respond, "but he is a vet," implying that it is not in the public domain that a veterinarian is more than capable of serving as a president of a country, cabinet secretary or governor of a central bank among others. Not long ago a parliamentary leader during vetting of a public servant in parliament in Kenya downplayed the importance of vets when he alleged, "the office we are dealing with is very serious, it is not like that of the Director of Veterinary Services," which sounded derogatory and condescending.

Although many may not appreciate the implications, in many parts of the world veterinary advice can literally mean the difference between life and death not only for animals but for humans too. About a billion of the world's poorest people depend on animals for food, income, social status or cultural identification, as well as companionship and security. For many animal owners, losing animals from disease or natural disasters is a catastrophe. Veterinary control measures are difficult to apply in practice but if a disease destroys most of those small farmers' poultry or if they are slaughtered compulsorily then those dependent on the poultry will suffer severe hardship. In such circumstances veterinarians must work with compassion as well as efficiently and must also be prepared to argue with government departments when neces-



*Dr Christopher Wanga*

sary. Large-scale disease outbreaks are amongst the most serious of disasters, having the potential to kill millions of animals and, in some cases, many people and to devastate the economies of local communities and entire countries. Achieving good animal health standards is essential but promoting animal welfare is also important. In disaster risk management it is important that animal health and welfare is considered along with human health and welfare. It should be the role of the veterinarian to ensure that this is done.

Veterinarians in all spheres are well-respected members of the community and whilst their animal health role is recognized, it is sometimes not so clear as to their animal welfare role. However they



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are uniquely placed to be the 'animal's advocate' and should, in most circumstances play a leadership role. When this does not happen then opportunities are often lost. Most of the veterinarians in general practice need to take up a more active role in the local community due to the trust and respect that they have from the general public to make a larger contribution than they often do. Veterinarians should become more involved in courts of law where one can give an expert opinion such as in a case involving animal cruelty where one has a duty to give evidence on behalf of the prosecution if they have examined the animal(s) involved and are clear in their opinion. However, If approached by a defendant and the veterinarian strongly believes that the case is based on inaccurate or false scientific evidence then they should be willing to appear in court to discount the allegation. I believe that many veterinary schools now provide students with a chance to study forensic medicine and become familiar with the task of giving evidence.

Global veterinary leadership like that exercised by persons such as Dr Monique Eloit of the World Animal Health Organization (OIE) is needed to reduce the global threat of infectious diseases of major food animal and public health importance. Development of a standard curriculum like the *day one competence* is an excellent way to prepare and train veterinarians and future leaders who understand and can deal with global issues. The key to the success of the programme is the veterinarian's understanding that there is a cultural basis to the practice of veterinary medicine in any country. At its best, the global veterinary leadership program would include a partnership between veterinarians and several international learning centers, a responsiveness to the identified international outreach needs of the profession, and attention to critical thinking and reflection. Appropriate skills are very essential to the global delivery of veterinary services.

Due to grassroots appeal many vets have found themselves joining elective politics to the various county assemblies or the national parliament. Politics at a regional or national level is more challenging but the training one undergoes in preparation for the veterinary profession enables a vet to confront all sorts of situations. Veterinarians in public service or those leading their professional outfits are in a position to provide independent veterinary opinions that can influence the policy makers. Internationally and in Kenya some of the veterinarians who have gone beyond their traditional calling

to offer leadership are many but it is important to recognize a few namely:

At the international level, a pioneer renowned veterinarian born in 1924, Sir Dawda Jawara, served as President of Gambia from 1970 to 1994. Before becoming President he served as Prime Minister of Gambia from 1962 to 1970. Further, Sir Jawara also served as the President of the Commonwealth Veterinary Association from 1967 to 1984. This is the highest in National leadership a veterinarian has ever achieved.

On the Kenyan scene we have positions of leadership which are a preserve for veterinarians such as Director for Veterinary Services, Chairman, Kenya Veterinary Board and Chairman, Kenya Veterinary Association while a few can be singled out where competition is beyond the veterinary domain and these include:

1. Prof Peter Mbithi, Vice Chancellor University of Nairobi, who is a full professor of Surgery at the University of Nairobi.
2. Dr Jasper Rugut, Chief Executive Officer, National Council for Science and Technology.
3. Dr Michael Mbiti, Senator for Trans Nzoia County.
4. Dr Victor Munyaka, Member of Parliament Machakos County.
5. Dr Andrew Tuimur, Chief Administrative Officer, Ministry of Agriculture and Irrigation.
6. Dr Mathews Owili, Deputy Governor of Kisumu
7. Dr Stanley Kemei Tarus, Deputy Governor of Trans Nzoia.

Others who have served as Cabinet Secretaries include Dr Paul Otuoma and Dr Noah Wekesa.

As a profession, we should be more aware of the good we can do on the larger stage. Our expertise in curing the sick or injured animal will always be in demand but our knowledge of the welfare of animals and their needs is also unique and we should not be reticent in coming forward. Veterinarians should continue playing their roles in other spheres of life if an opportunity arises in order to positively impact society beyond the traditional calling.

*By Dr Christopher Wanga, PhD, EBS  
Acting Director Livestock Policy Research and Regulations  
Directorate, Ministry of Agriculture and Irrigation  
Chairman, Board of Directors, Kenya Veterinary Board  
Vice President, African Veterinary Association  
Regional Representative East Central & Southern Africa,  
Commonwealth Veterinary Association*

## 2018 THEME: ONE HEALTH FOR SUSTAINABLE LIVELIHOODS

IFAW seeks co-existence of wildlife and livestock for sustainable livelihoods.

With exponential growth in human population amongst other factors, wildlife numbers are decreasing at an alarming rate. Land previously used by wildlife for migration and dispersal is rapidly converting to settlement and for agricultural use leading to human – wildlife conflict.

To sustain global ecological balance, animals are an integral part of the planet. At IFAW we seek to rescue, rehabilitate and release individual animals back into the world to preserve populations.

We engage communities for collaborative partnerships to conserve landscapes for wildlife; advocate and support land use planning for harmonious co-existence of wildlife, livestock and man.

We use evidence-based research from elephant movements to advocate for planned land use that includes designated areas for wildlife, tourism, human settlement and livestock grazing.

We build the capacity of community members in the Amboseli ecosystem through Grazing for Change (G4C) program that seeks to impart knowledge on livestock husbandry and land management.

*Figure 1: An elephant walks towards a traditional home with livestock and community members in the background. An example of co-existence amongst livestock, wildlife and man*



*Figure 2: Community members from Kitenden Conservancy in Amboseli learn about livestock husbandry and grazing management*

*Figure 3: A Maasai Woman from the Kitenden Conservancy holds the horn of a cow at the Enonkishu Conservancy. IFAW have facilitated members of the Kitenden Conservancy in capacity building on conservancy management and Grazing for Change.*



# Brooke EA supports communities in preserving their donkeys

With the licencing of three legal donkey slaughter houses and two more under way, donkeys in Kenya are experiencing a rapid decrease in numbers unlike any other time recorded in history. Reports collated by the Brooke East Africa office through her partners show that as at end of November the number of donkey theft cases reached 2,159 up from 1,000 in January 2017. Some of these animals have been identified by owners at the slaughter houses but many of the stolen ones are cruelly killed, skinned and their carcasses strewn in the bushes.

With support from UK, The Linda Punda Ushinde initiative was an innovative approach that Brooke East Africa come up with to generate locally viable and sustainable solutions/ideas to address donkey theft through a competition. The competition was launched on 17th May 2017 during the National Donkey Day in five counties namely Kiambu, Nyandarua, Nakuru, Narok and Kajiado, with a total of 221 Donkey Welfare groups working directly with BEA partners in these areas invited to compete.

Applications were reviewed by an adjudication panel using a scoring matrix developed. Each county had a panel whose terms were to review, select and award the winning solutions proposed by the Donkey welfare groups. The general composition of the panels included; County Community Development Social Service Officer, County Director of Veterinary Services, County Commissioner, Partner Organizations Representatives and a representative from BEA.

A two stage process was adopted in the selection of the winning ideas. The first stage, involved scoring the ideas by use application forms. From this initial stage, five (5) groups in each county with the highest average, proceeded to the second stage - the

Interaction stage.

At the Interaction Stage, the five groups had one on one audience with the adjudication panel to defend and articulate their ideas. This enabled the panel to have a feel of authenticity of the group and the idea, the ownership of the idea and additional details that the group could have left out or missed during the application writing.

The winning ideas included a variety of creative ideas with a majority of them focusing on the building of donkey shelters. Many groups opted for the construction of shelters using locally available material like used iron sheets, that would not harm the donkeys and locally available timber, tree branches and sticks. Their plan was to have these shelters lockable therefore limiting the access thieves would have on their precious donkeys. A number of owners through sensitisation have also started locking their donkeys with the rest of their livestock together at night.

Some of the other groups came up with identification process like ear tags. One group that KVA works with in the Brooke supported donkey welfare project in Kajiado Mashuuru area opted for neck bells around the donkey to alert the owners of unplanned for movement especially at night.

These ideas are on their implementation stages and Brooke East Africa has been observing their success rates and noting the lessons. After the implementation stage, there will be a comprehensive analysis done to gauge any difference if at all in the number of donkeys that have been protected from theft and illegal slaughter.



*A donkey sanctuary*

## **Moving towards better tethering practices for donkeys**

By Dr Janet Muthusi KVA

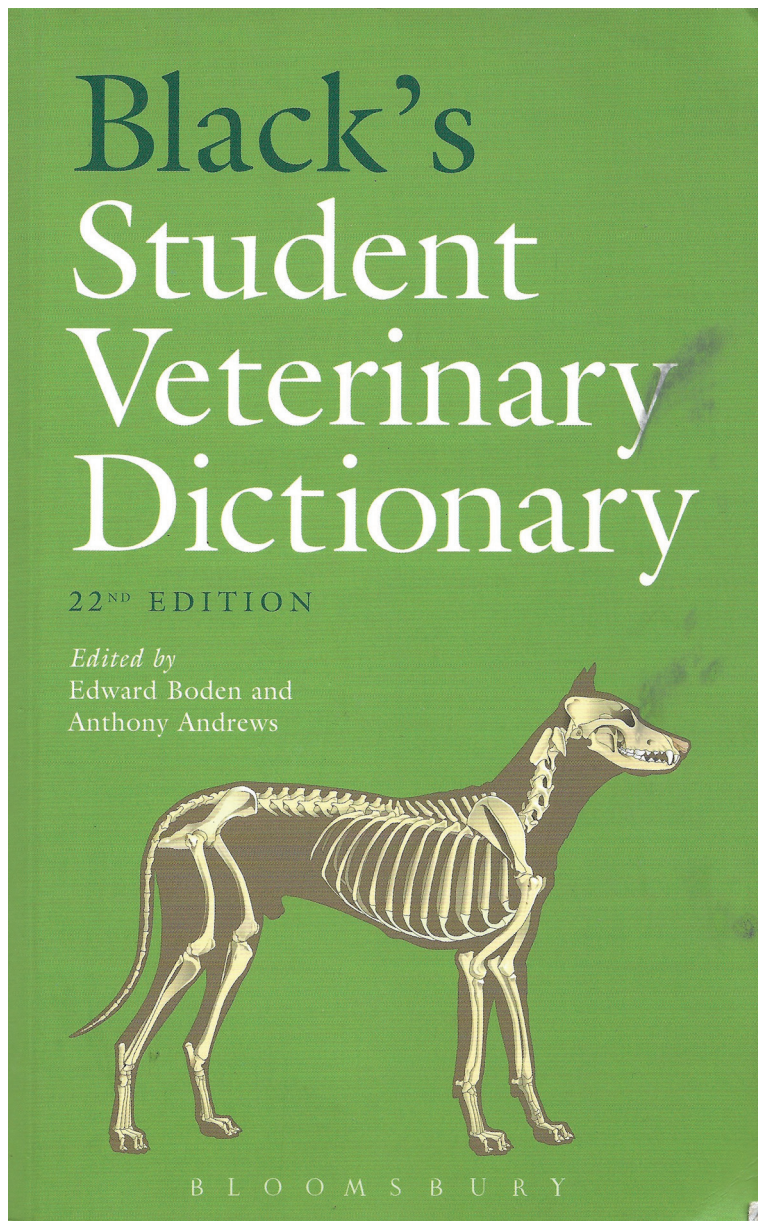
Tying ropes around a donkey's fore limbs (tethering) is a practice used by donkey owners and users to control and restrain them. Additionally it is done to prevent them from roaming into insecure areas, trespassing to other people's property and from any other potentially risky situations. However, many owners and users do not have sufficient information on how to appropriately tether their donkeys without causing pain or injury.

Donkey owners use nylon ropes to tether their donkeys as they consider them to be strong and more durable. This causes wounds on the animal as the nylon ropes are made of coarse material which is tied too tight. To address this problem, the Kenya Veterinary Association has developed an alternative to tethering using nylon ropes in order to reduce the intensity and occurrence of wounds on donkeys.

The alternative technique involves a wide manila rope which is cut into portions and then each rope is carefully and permanently fitted manually around one fore limb using a strong thread and needle. The rope is checked to ensure that it is not too tight or too loose by fitting fingers between the rope and the donkey's limb. A small loop is left to pass the nylon ropes without causing any injury to the donkeys' limb.

As more donkey owners and users are trained on how to use this technique, it is expected that this will reduce the occurrence of wounds caused by inappropriate tethering methods.

Brooke EA continues to work with the Kenya Veterinary Association to train donkey owners and users on the best methods to reduce the harm caused by wrong tethering practices. We are piloting the innovation in three areas: Kiserian, kadisi in Kajiado North and Kitengela in Kajiado East. We will target 20 donkeys per area which translates to 60 donkeys. The total number of owners will be 60 or less.



**Title: Black's Student Veterinary Dictionary**

**Edition: 22nd**

**Publisher: Bloomsbury**

**Editors: Edward Boden  
Anthony Andrews**

**No of pages: 982**

**Year of publication: 2017**

**The book is in one colour on uncoated paper.**

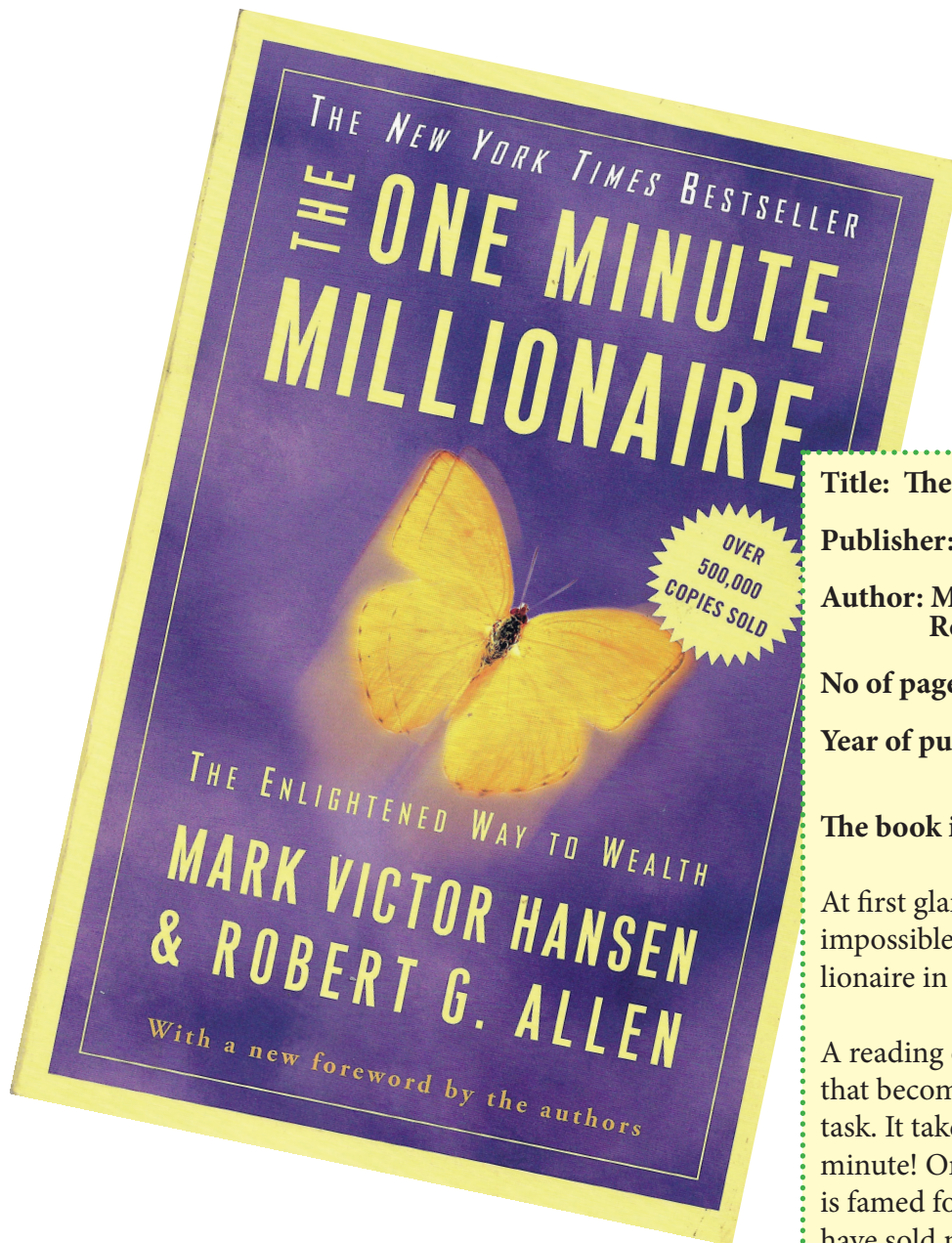
**Black's Student Veterinary Dictionary** is an encyclopaedic dictionary in one handy volume.

Black's Veterinary Dictionary has been a bestseller for over 80 years, and the Student's edition has become an essential reference tool for anyone with an interest in the care of animals. Much more than a list of veterinary terms, its practical approach ensures that readers gain an insight into the signs and symptoms of common, and less common, diseases, their diagnosis and treatment.

For the 22nd edition, much new and updated information has been included, reflecting numerous developments that have taken place in animal care and husbandry, and welfare. There is greatly expanded coverage of topics relating to popular breeds of dog and cat, and the inheritable conditions that might affect their health.

Advances in medicine, surgery and diagnostic techniques; descriptions of newly identified diseases such as Schmallenberg virus; the resurgence of old scourges such as TB in cattle; and ongoing enzootic infections such as bird flu are included in this edition.

**Black's Student Veterinary Dictionary** is a must have reference. It is available from leading bookshops.



**Title:** The One Minute Millionaire

**Publisher:** Three Rivers Press

**Author:** Mark Victor Hansen & Robert G. Allen

**No of pages:** 424

**Year of publication:** 2002

**The book is in one colour on newsprint paper.**

At first glance, this book seems to be making the impossible promise of helping one become a millionaire in one minute.

A reading of the book however makes it clear that becoming a millionaire is not a one minute task. It takes time. But it begins with that first minute! One of the authors, Mark Victor Hansen is famed for the chicken soup series of books that have sold millions of copies around the world.

What gives the book the One Minute name is that the chapters are structured in such a way that each can be read in one minute.

How long does it take to get an idea that will generate a millionaire? A minute? or less? How long does it take to make the decision to become a millionaire? These are all intriguing queries.

The book is a must read and will challenge your thinking in new and interesting ways. At the end of the day, becoming a millionaire is hard work and it takes lots of time. But it begins with those one minute decisions we can make.

### Answers to the wildlife crossword on page 28

Leopard, Lion, Giraffe,  
Antelope, Buffalo, Elephant,  
Rhinoceros, Fox, Hyena,  
Deer, Monkey, Oryx,  
Kudu, Impala, Dik-dik,  
Zebra, Tiger, Eel,  
Hippo, Dinosaur, Crocodile,  
Bird, Gnu, Bear,  
Bat, Moose, Dog,  
Ass, Cat, Roe, Cobra

## What does it really mean to have passion?

*"The Greeks never wrote obituaries. When a man died, they asked only one question, "Did he have passion?"*  
-Dean, Serendipity

The topic of "Passion" has had more of an impact on me this past month than ever before. Passion is an interesting thing, it is something that everybody loves, yet there is something about passion that takes great challenge, strength, and risk.

Passion is such a key ingredient to living life truly alive. Unfortunately however, only a few people in modern society really grasp and fully live the true meaning of this powerful word.

The root of the word "passion" is found in the Latin word "passio" which means "suffering." On the surface, the word "passion" can stir emotions in us that inspire, motivate, and elevate us to live life at a higher, more exciting, fulfilling level. But just as the core of an apple cannot be separate from the apple itself, "suffering" is always at the core of passion. We cannot have one without the other.

George Hegel, a German philosopher and inventor said "nothing great in the world has been accomplished without passion." Through the years, people like Walt Disney, Martin Luther King, Mother Teresa and especially Jesus have been examples to us of a life lived with passion.

It is interesting that the last journey of Jesus life from the last supper to his resurrection was called "The Passion." Hebrews 12:2 says "...for the joy [of obtaining the prize] that was set before him, he endured the cross despising and ignoring the shame..."

Passion is all about suffering for something worthwhile and Jesus last week of life epitomized this. His heart was so "on fire," so full of tomorrow, so full of a desire for what he needed to accomplish that it gave him the strength to endure and face the cross.

Many people in today's society want passion without pain, prize without price. Though most understand that passion involves desire, thrill, and excitement, few really grasp the fact that passion involves suffer-

ing. Just because we want something does not mean that the attainment of it is going to be easy.

When I first made a decision to pursue my passion I was literally shocked by all the work and "suffering" involved in making it a reality. Like many others, I was under the impression that just because I had a dream, it would somehow fall on me. Unfortunately, that is not the case at all.

A burning, passionate, "on fire" heart is what will help us endure the crosses we need to face in our lives but it is important that we understand that there will be pain. The bible says that Jesus despised the cross, he despised the shame that went along with his suffering, but he was willing to go through it for the joy that was set before him.

Pursuing your passion IS going to involve rejection, discipline, having people not understand you, being talked about behind your back and so on. It is the price we need to pay. But, living with passion will always be so much more rewarding than living without it.

I have come to believe that there is no life without passion. Being passionless is boring, dull, full of compromise and always filled and controlled by fear. Though passion involves suffering, it does contain our true life. It is what enables us to live at our highest potential and fulfill our God-given dreams.

So, some day when our lives are called upon to answer that one all important question "Did he/she have passion?" I would hope that for all of us the answer will be a loud, resounding YES!

© Barb Elyett. Barb Elyett is a Canadian singer/songwriter, recording artist, speaker, author and founder of Aleta Records. Her articles have been published extensively on and offline and have impacted people all over the world in a positive way. Barb's new album, *The Simple Side.*, has received four Maja Award nominations and is currently receiving airplay and accolades from around the world. Sign up for Barb's FREE So Alive Inside newsletter at [www.barbelyett.com](http://www.barbelyett.com).